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Railway Age

With which are incorporated the Railway Review, the Railroad Gazette and the Railway Age-Gazette. Name Registered U. S. Patent Office.

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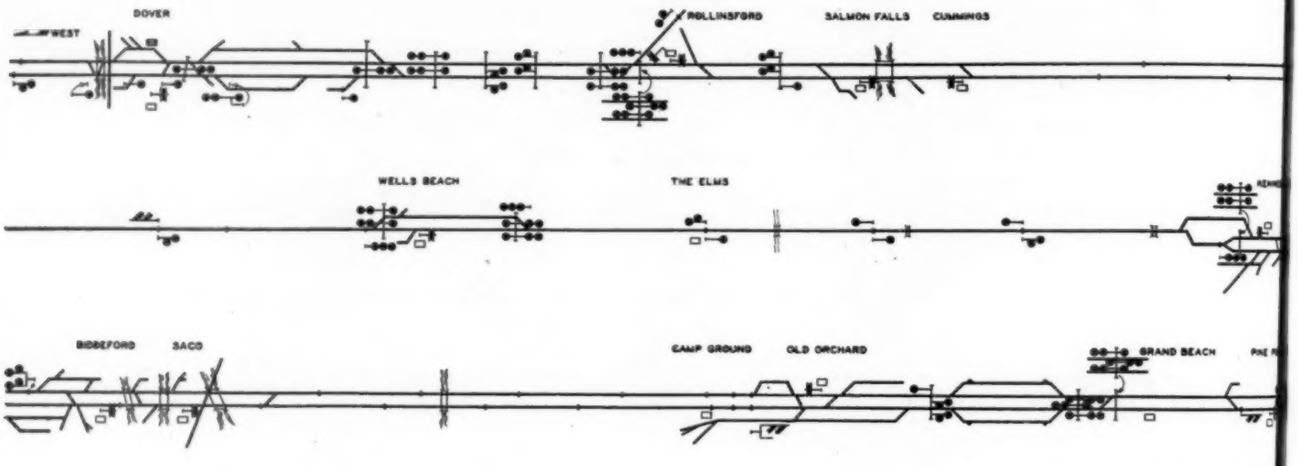
Another "Union" Centralized on BOSTON

Rigby, Maine to



DOVER AND RIGBY, on the Boston and Maine Railroad, are on the Portland Division. "Union" Centralized Traffic Control is being installed on the Eastern route which consists of about 30 miles of single track, and on the Western route which consists of about 33 miles of double track; there is also a 10-mile stretch of single track on the Western route between North Berwick and Kennebunk, making a total of 106 track miles. Traffic congests on the single track section, and it is necessary at times to run trains against the normal direction of traffic on double track by train order. Since nearly all traffic is moved on the

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Railway Age

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Business Men and Socialism

RAILWAY officers who attended the sessions of the Chamber of Commerce of the United States in Washington last week listened with amused interest to the almost frenzied discussions of the provisions and administration of the federal farm relief act. These discussions were caused by a movement started by the Minneapolis Chamber of Commerce which resulted in the national chamber adopting resolutions condemning the farm relief act and demanding its repeal.

The ground of the attack upon the act was that it is resulting in the government indirectly engaging in competition with private business in the marketing of farm products. This competition of the government with private business was denounced as being revolutionary, socialistic, unfair and destructive of the public welfare.

Inconsistent Attitude of Business Men

Railway officers were amused as well as interested because of the complete inconsistency disclosed in the attitudes of many business men regarding government activities in the field of transportation and in other branches of business. Are most business men really opposed to socialism, or is not its rapid spread in this country due to the fact that most business men are opposed to it merely in their own businesses and are in favor of it in other people's businesses? Business interests of Minneapolis are energetically carrying on propaganda to get the federal government to spend about $90,000,000 in deepening the upper Mississippi river to the Twin Cities. The government, through the Inland Waterways Corporation, already is operating a barge line to the Twin Cities in competition with the railways, and on the upper Mississippi river part of its line it is constantly incurring deficits. This is socialism according to the definition of socialism given by Minneapolis business men in their attacks on the farm relief act; and according to their own definition it would also be socialism for the government to spend a large amount of public money in deepening the upper Mississippi river.

The most effective argument advanced for government operation of the barge line and for extensive development of inland waterways, and especially for the upper Mississippi, the Lakes-to-the-Gulf and the Missouri river waterway projects, is that these policies will help to relieve the farmers. If the government should thus engage in competition with the railways at the expense of the taxpayers to relieve the farmers, why should it not engage in competition with private capital invested in other lines of business at the expense of the taxpayers to relieve the farmers? If some socialistic policies are so desirable, why are others so undesirable?

Business Men as "Mendicants"

We fear the inconsistency of the business men of Minneapolis, and of many other business men regarding similar matters, can be but too easily explained. The business men of Minneapolis apparently are much less concerned regarding the welfare of the farmer than regarding their own interests. They believe they will benefit by the expenditure of the taxpayers' money upon the operation of the barge line and the "improvement" of the upper Mississippi. They believe they are being injured by the government's competition with private business under the farm relief act. Like many other business men, they want all the socialism that they anticipate will increase their own profits, but they are opposed to any form of it that will reduce their profits. Most business men become ardent in their denunciations of socialism when the government interferes with their business, but apparently this is not because they love socialism less, but because they love their own profits more.

The Minneapolis Chamber of Commerce has been distributing an address delivered recently by its secretary, John G. McHugh. Mr. McHugh denounced the farm relief act because it results in government money being loaned to farmer-owned and controlled co-operative marketing agencies at 3½ per cent, whereas the independent grain dealer "may be compelled to pay 6 or 7 per cent, and yet the independent grain dealer is

being taxed to furnish the $500,000,000 fund thus loaned to his competitor." The railways of the United States are being taxed to help provide highway and water transportation in competition with themselves. Isn't it too bad that any industry excepting the railways should be taxed for the purpose of promoting competition with itself?

Says Mr. McHugh, "One of the great questions which confronts us at the moment is whether we are to become a nation of men, self-reliant, ambitious, asking only an equal and fair opportunity from a competitive standpoint, or whether we are to become a nation of mendicants, a nation of beggars, with a tin cup, holding out our hand to the government for a dole." Mr. McHugh is right. That is a great question that now presses for an answer.

The business men of the Mississippi valley, including those of Minneapolis, already are passing a tin cup to all the people of the United States asking them to contribute their pennies and their dollars toward the development of a system of waterways in order that these business men, with the aid of government subsidies, may be able to ship their freight at lower rates than the railways can make without the aid of government subsidies. The business men of the Mississippi valley are not merely becoming mendicants. They already are mendicants.

Wanted—More Socialism

Socialism has made such great progress in the transportation industry that the *Railway Age* regards with unabashed tolerance all government measures that apply the same principle to other kinds of business. We are in favor of the government using the taxpayer's money in competition not only with the grain dealers, but also with manufacturers, mine operators, bankers, publishers, jobbers, and chain stores. One of the greatest needs of the railroads is for more socialism in all other kinds of business. When men engaged in other lines of business get their abdomens sufficiently filled with socialism they may begin to see that socialism is not an unmixed good in any kind of business, including that of transportation. The farm relief act may or may not be socialistic, or it may or may not be good for the farmers or the nation, but it is serving at least one useful purpose—that of educating a large number of business men to appreciate the results that subsidized government competition is able to accomplish in other kinds of business as well as in the transportation business.

Now that the Chamber of Commerce of the United States has adopted resolutions condemning what business men regard as the socialistic policy of the farm relief act, may we not hope that business men will begin to regard socialistic policies affecting the railways with less favor?

Condition of Business

IT is plain now that the apparent change in the trend of car loadings in the first half of April was due to temporary causes, and inspired too much optimism. In the four weeks ended April 26 car loadings were 9.2 per cent less than in the corresponding weeks of 1929, and in the week ended April 26 they showed a decline of 13.7 per cent. These figures indicate that the freight business and total earnings of the railways in April were relatively the poorest that they have been since the decline of general business began last fall. In spite of all the predictions that were made to the contrary, it is now evident that no recovery of general business began in the second quarter of the year, and that the beginning of such recovery cannot now be reasonably expected before mid-summer.

The trend of business presents railway managements with a perplexing problem. They have carried out their agreement with the national administration to try to help maintain general business by investing about 40 per cent more in permanent improvements in the first quarter of this year than in the first quarter of last year. In spite of the assurances given by other business interests, it is evident that, with the exception of railroads and public utilities, other interests have been retrenching almost as much as they have in past periods of depression. If "business as usual" actually were the prevailing policy in industry and commerce the amount of freight moving by rail would not be showing the decline that it is.

The railways could make larger retrenchments than they have thus far. They would only be following the example of most other industries if they did so. There are, however, two widely different ways in which railways can retrench. One of these is by curtailing expenditures for needed improvements and maintenance. In the long run, this is always a costly policy. Ultimately, needed improvements and expenditures for maintenance must be made. They can be made more economically in a period of poor business than in a period of good business, and therefore to defer them when business is poor ultimately involves a net loss.

The second way in which railways can curtail expenses is by avoiding and reducing wastes, especially in train service. Wastes in service usually are due to excessive competition. They result, for example, from increasing the number and speed of passenger trains and increasing the speed of freight trains when there is no public demand for such changes and earnings do not warrant them. Such wastes are most likely to be increased when business is poor because at such times competition for the reduced traffic available is likely to be the sharpest.

In a period such as this every class of railway expenditures should be scrutinized with the utmost care.

Some economies are merely nominal and some are real. Many of the most important real economies can be effected only by the substitution of sane co-operation between rival railways for foolish and excessive competition. There never was a time when such reduction of foolish competition and increase of sane co-operation in both passenger and freight service were more needed than they are now.

Air Transport Shows Continued Advances

DURING recent months there have been many reports of a distinct slump in the aviation business. True though these reports have been, they do not apply to air transportation. Particularly in the west, where air transportation of passengers has had its most intensive development, steadily increasing numbers of travelers are patronizing this new carrier. In the aggregate, the number of such air travelers is still quite small in comparison with the number of travelers on railway trains; but the significant point is that the number of air travelers is increasing as air transport services are being extended, and such extensions are coming quite rapidly. Particularly between Los Angeles, Cal., and San Francisco, is the volume of air traffic steady and relatively large. Unquestionably this is due to the fact that the service between these points is most frequent.

In general, passenger rates on the western air lines are almost exactly the same as railway plus Pullman rates between the same points. In some cases they are slightly lower, when consideration is taken of the cost of meals in dining cars, taxicab fares and other incidentals of railway travel. These low rates have been the deciding factor in the steady increase of the air lines' passenger business. They have made necessary the operation of equipment of greater capacity. Airplanes of from 10 to 18-passengers capacity are now common on most of the western air lines, while one organization has in service several 32-passenger planes.

It appears that the passenger-carrying air line which is making money is exceptional, if not a rarity. Reductions in rates which have been made by virtually all of the air lines have increased their volume of business sufficiently to increase their gross revenues, but even these increased revenues appear to be insufficient to cover the cost of operation. This is not conclusive evidence, however, that air lines can never hope to make money, charging rates which compare so favorably with railway rates. On the contrary, there is expectation that the additional traffic the low rates attract will make possible the operation of additional equipment without increasing the overhead costs, thus spreading these more thinly over each plane operated and perhaps reducing the operating charges against each ship to the point where capacity or near-capacity loads at the present rates will enable a profit to be earned. Another factor favorable to the passenger-carrying air lines is the Watres bill which was recently passed by both houses of Congress. Under this bill the passenger air lines will be permitted to carry mail on a favorable basis of remuneration.

Most of the air lines are amply financed and ably managed. They are steadily improving their operating facilities in such a manner as to better the reliability and safety of their service. How far the air lines can or will go in attracting passenger traffic is still problematic, but certainly their activities warrant the close attention of the railways, for it is certain that a great part of the passenger business now being carried by the air lines consists of travelers who, but for the presence of the air lines, would travel by train.

Should Pension Liability Be Accrued Currently?

PAYMENTS made to pensioners are quite legitimately charged to operating expenses. But when should the charge be made? It is during the active years of an employee's career that the pension privilege is built up. Should not this liability be discounted when the employee is actually working and an appropriate charge made to operating expenses during these active years, rather than waiting for actual retirement? The practice of charging pension payments to operating expenses only when such payments are actually made may have the effect of understating legitimate charges to operating expenses in some years, while unduly burdening these expenses in others.

These considerations were stressed in the address of President T. O. Edwards of the Railway Accounting Officers Association at the convention of that association in New Orleans last week. Moreover they were dealt with in committee reports and discussed on the floor of the convention. The present stumbling block toward introducing a more accurate accounting for these payments is a ruling by the Interstate Commerce Commission forbidding the railroads to make charges to operating expenses in advance of actual payment unless the pension plan contains a contractual feature obligating the railroad to pay the pension regardless of all contingencies.

It is quite apparently going to take some time to work out this problem to the satisfaction of all concerned. The first step is, of course, for the facts to be made generally known. The discussion at New Orleans last week is a beginning in this direction.

Accountants Hold Lively Session

Spirited debate on formation of freight appeal committee and plan for rotating committee appointments

THE forty-second annual convention of the Railway Accounting Officers Association was held at the Hotel Roosevelt, New Orleans, on April 30-May 2. Attendance totaled 558—made up of 305 active members, 5 honorary members, 25 guests and 223 members of families. After active discussion, the convention chose Mexico City as the next place of meeting, the date to be fixed by the executive committee.

Officers for the coming year were elected as follows: President, G. J. Bunting (vice-president, Illinois Central); first vice-president, H. S. Palmer (vice-president, New York, New Haven & Hartford); second vice-president, W. B. McKinstry (comptroller, Central of Georgia); secretary, E. R. Woodson (re-elected); members of executive committee, W. C. Wishart (vice-president, New York Central), J. J. Ekin (comptroller, Baltimore & Ohio); G. E. Bissonnet (general auditor, Union Pacific) and F. W. Sweney (comptroller Northern Pacific). The usual order of succession to the presidency was broken this year for the first time in the history of the association. This situation resulted from the resignation in July last year of W. E. Eppler, first vice-president of the association, who took this step pursuant to his resignation as comptroller of the Delaware & Hudson. Mr. Eppler, in the ordinary course of events, would have been elected president this year, the honor going next year to Mr. Bunting.

Proposal to Rotate Committee Membership

The liveliest discussion of the convention developed at the closing session. Under the head of new business, President T. O. Edwards (general auditor, Union Pacific), manifesting a similar concern as the preceding president (H. W. Johnson, comptroller, Chicago, Burlington & Quincy) over securing a more general participation in the work of the association by the rank and file of its membership, proposed a revision in the method of constituting committees. Tenure of committee membership is now for a three-year period with a minority retiring each year. Retiring members who have been active in committee work have, as a general rule, been re-appointed. This has resulted in only a relatively slight change in committee personnel from year to year and has kept from participation in committee work many who might welcome the experience.

To secure greater rotation and a wider participation in committee work, President Edwards proposed that a committeeman at the end of his term of office should be ineligible for reappointment for a period of one year —this restriction not to apply to the executive committee, which is elected, nor to the committee on general accounts, which is made up of the chief accounting officers of the larger railroads. The idea met with a favorable reception on the part of representatives of some of the smaller roads and was not without a substantial number of advocates among the chief accounting officers of some of the larger companies. Others expressed the opinion that the committee on general accounts should not be made an exception, but that the same rules of tenure should be applied to it as to the other committees. The opinion which finally prevailed, however, by a close vote was that the subject should be referred to the executive committee for study and report, to be printed in the Agenda for next year's meeting.

Another brisk argument developed over a proposed amendment to the by-laws which would remove from his position a committee member failing to attend three consecutive committee meetings and making him ineligible for reappointment until a year had elapsed. A resolution of the executive committee, approved by the association, carries a provision of forfeiture but makes immediate re-appointment possible. It was decided to maintain the existing practice.

A resolution of approval and support to the George Washington Bi-Centennial Celebration to be held in 1932 was passed, as were the usual resolutions of appreciation to the hosts of the convention.

Opening Session

The convention proper was preceded by a day devoted to meetings of the various committees of the association. These were held on April 29, the convention itself opening on April 30.

The meeting on April 30 was called to order by President T. O. Edwards. After the invocation, the Acting Mayor of New Orleans delivered the address of welcome to which G. J. Bunting, vice-president of the Illinois Central, responded. Larz A. Jones, president of the Vicksburg, Shreveport & Pacific, an honorary member of the association and chairman of the reception committee, then welcomed the delegates and their families. The next speaker was Mons. Walter Coquille, a local humorist and self-styled mayor of Bayou Pom Pom, who delivered a burlesque address in the Cajun dialect.

Judge R. V. Fletcher, general counsel of the Illinois Central, was then called upon for his address on the Relationship of the Law Department to the Accounting Department. Judge Fletcher stressed the growing complexity of railway legal work and the heavy reliance now placed on accounting departments. He said that if he were to start his railway legal career over again today he should feel the first study he should undertake would be railroad accounting. Following this presentation, President Edwards delivered the presidential address, after which the routine business of the session began. Abstracts of the addresses of Judge Fletcher and President Edwards follow:

Judge Fletcher's Address

I have been for nearly twenty years in the service of a railroad company, and as my experience has ripened and deepened, my knowledge of significant railroad problems, my respect and admiration for the work of the accountant officers have steadily increased. Indeed, if I were permitted to revise retrospectively the ordering of my life work, I should begin my schooling with a course in railroad accounting, as representing the one essential equipment for successful handling of railroad questions. For the accounting department touches every phase of railroad activity, from the office

of the president, who must deal with financial problems, to the section foreman, whose reports may form the basis for classification as between capital and operating expenditures. In this era of intensified public supervision and regulation, the work of the accountant becomes increasingly important, since his records and reports must be constantly consulted as furnishing the best and often the sole evidence of compliance with the innumerable rules laid down by public authority.

There was a time in the history of American railroads when a highly organized law department was not believed to be necessary. That was the period before the present era of intense regulation. In this primitive, though possibly happy, period, there was not much for the railroad lawyer to do except to examine contracts, to supervise security issues and to defend personal injury suits in the courts. Actions of this character were ordinarily handled by local attorneys resident in the communities where such actions were tried, and the attorneys charged with responsibility usually gave only a portion of their time to railroad business. Indeed, the same policy and practice still prevail as this branch of the law business of the average railroad. In the general office of the railroad, there was in that ancient time ordinarily a general counsel, who advised as to corporate affairs, then usually far from intricate, and perhaps one active assistant who examined contracts and received reports from the trial attorneys. There was, then, no occasion for the services of commerce attorneys, tax attorneys, valuation attorneys, and lawyers who now give so much of their time to the work of advising department heads upon all the involved questions of law that the multitude of modern regulations now causes to arise.

T. O. Edwards

G. J. Bunting

H. S. Palmer

E. R. Woodson

The Days of Simplicity

I fancy that in those early days, the work of the railroad accountant was correspondingly simple and easy. There had not then grown up that vast body of accounting rules and regulations, with all their intricate interpretations, with which you are now confronted. Then, if the board of directors saw proper to pay for additions and betterments out of earnings and charge such expenditures to operating expenses, this was merely a question of policy, and there was no restraining hand of the Interstate Commerce Commission to interfere. We were not then confronted with the complexities of income taxes, federal and state. Valuation had not been taken over by the government. It was then, as I understand it, the chief task of the accounting department to keep an accurate record of receipts and disbursements and his problems were largely those of an experienced bookkeeper on a rather large scale. In those days the law department, except in the matter of issuing securities, was not intimately concerned with the work of the accountant.

But as time passed, the passion of the American people for legislative regulation made itself felt. With the creation of commissions, state and federal, each charged with the power to direct some phase of railroad activity, the labors of the lawyer and the accountant began to draw nearer together. The lawyer soon found that whether his efforts be to resist these regulatory orders or to comply with them, he must get his aid and comfort from the accountant. The accounting officer in his turn found that in his effort to construe and apply the obscure and often conflicting orders promulgated by the regulative bodies and their agents, the training and experience of the lawyer gained in construing statutes and contracts were often helpful. In this way, the two departments were drawn more closely together, as the burden of public regulation became heavier.

I may illustrate the interdependence of the two departments by a few familiar illustrations. Under the Transportation Act, as we have it now, a new road can not be built nor a line extended into new territory without the assent and authority of the interstate commerce commission. If an application is to be made for such an extension, the railroad lawyer charged with the responsibility of preparing and presenting the application must turn to the accounting department for information as to the probable balance sheet showing of the new line. Taking the opinion of the traffic department as to the probable amount of business in sight and the rates that will likely prevail, the accountant must enter the field of constructive imagination and submit his estimate of results of operation over a period of years. This estimate is in reality the basis for the ultimate decision of the regulating body as to the wisdom or unwisdom of the project. I have always felt these preliminary and prophetic estimates of the accountant call for a magnificent display of courage, since their accuracy can so soon be tested by actual experience.

If a line is to be abandoned, the lawyer is even more dependent upon the accountant. The commission in its wisdom has required as a condition precedent to abandonment that the carrier submit replies to a carefully prepared questionnaire calling for all sorts of detailed information, much of which only the accountant can supply. Naturally the commission in passing upon an application to abandon must be governed largely by the experience of the railroad as a revenue earner, and here only the accountant can furnish the necessary information. It is not always such a simple task to supply the necessary statistics. Usually, the application to abandon applies to a branch line, and there must be the most accurate allocation of earnings and expenses as between the branch line and the main or parent line. Here the lawyer is absolutely dependent upon the accountant.

If securities are to be issued, whether they take the form of capital stock, bonds or equipment trust certificates, the lawyer is helpless without the accountant. Indeed, so completely are the questions involved accounting questions that in securing authority from the commission, unless there is something out of the ordinary about the transaction, the work of the lawyer is almost perfunctory. The consent of the commission will almost certainly depend upon the financial and accounting showing made by the accounting department.

Assisting the Traffic Officers in Rate Cases

In these days, the law department must give a large share of its time and attention to litigation with respect to rates. There was a time, doubtless, when the traffic department used its experience and judgment to a very large extent in establishing rate bases for the handling of business. But the commissions have been functioning over such a period of time, and with such activity, that rates both on classes and commodities are now largely the product of these regulating agencies. And so it has come about that before any important change can be made in rates, the whole matter must be submitted for

decision to one of these rate-fixing bodies. Necessarily, the rate lawyers must be called in to handle cases of this character. In recent years, we have come to depend to a constantly increasing degree upon the resources of the accounting department to defend our rate cases. The tendency in this direction was greatly accelerated by the enactment of the Transportation Act, with its provisions for special emphasis upon the revenue needs of the carrier. In every proceeding affecting rates, where the primary purpose is to increase revenue, the case must be built upon statistics which only the accounting department can furnish. So it was that in the inception of the Transportation Act Regime, in 1920, when the ex parte 74 proceeding was inaugurated for the avowed purpose of increasing revenues to take care of increased expenses due to post-war conditions, the case for the carriers was presented through the accounting officers, who were called upon, through a showing as to revenues and expenses, to justify a horizontal percentage advance in rates. As long as the law lays upon the commission the obligation to establish rates which will yield a fair return upon values for a large group of carriers considered as a whole, the revenue feature will be paramount in every major rate case. It is true, likewise, that even in cases involving individual rates, the cost of performing the service is becoming increasingly important.

In that part of the lawyer's work which deals with the application of section 13 to state rates, the accountant is invaluable. That part of the act which prohibits a state from discriminating against interstate commerce has been constantly invoked in the last ten years, and often upon the revenue feature of the law as construed in the Wisconsin passenger fare case. In such instances the problem is to show that the loss occasioned by adverse orders of state regulating bodies unduly burdens interstate commerce by depleting the carrier's revenues substantially, thereby making it necessary to supply the deficits out of the proceeds of interstate operations. Here the lawyer must depend upon the accounting department for support. Very recently we have heard a great deal about railroad consolidations. Discussion on this subject has been quickened by the orders of the commission, promulgating its permanent plan for the consolidation of the carriers into a limited number of systems. If these plans are to be carried out, either under existing law or under some federal act yet to be enacted, railroad accountants will be very busy men, indeed. If the law stands as it is, the stocks and bonds at par of the consolidated corporation can not exceed the aggregate of the values of the consolidating properties. The lawyer who takes before the commission a plan for effecting a consolidation must be fortified by accounting testimony not only as to value of stocks and bonds: he must also demonstrate the public interest advantage of the proposed consolidation by an exemplification of earnings past, present and prospective. Upon the showing made by the accountant, the success of the undertaking will largely depend.

Neither can the accounting department escape when we tackle the almost hopeless jumble of valuation. For a time, it may have been supposed that the task of valuation is that of the engineer. The present valuation act was passed in the light of the decision of the Supreme Court in Smyth vs. Ames and this case, to some extent at least, represented the triumph of the reproduction or engineerng theory of valuation. But with the completion of the primary valuation, the attention of both carrier and commission must be directed largely to bringing these primary valuations down to date. In discharging this duty, the engineer seems to be receding and the accountant correspondingly advancing. This tendency has been furthered by the commission's obvious preference for the investment theory of valuation. If the Supreme Court had not over-ruled the O'Fallon Doctrine, as announced by the commission, clearly the valuation engineer would have become obsolete. If the recently offered Howell Bill should become a law in any form that resembles the present form, valuation will be almost wholly the work of the accountant.

Where we come to consider the recapture clauses of the law, we at once and instinctively turn to the accountant for assistance. In such a proceeding, there are involved the determination of the value of the property employed in the service of transportation, and also the determination of net railway operating income amounting to a figure that represents six per cent upon the value. In such a case, the accounting officer must justify the integrity of his whole system of accounting, including the separation of expenditures as between capital charges and operating expenses, his charges to depreciation and other reserves, his estimates as to tax accruals, and every other feature that affects so much of his income account as belongs above the line. On many roads, it is probable that for the next ten years, unless the law is changed, a very considerable part of the time and effort of the law and accounting departments of many important railroads will be devoted to the preparation and trial of recapture cases.

Turning aside for the moment from my theme, and considering the general situation rather than my own road, which has, perhaps, as little to fear as any important line, I wish to emphasize the importance of securing relief by legislation from a condition which, in some cases, may threaten the very solvency of certain railroads having comparatively small valuations but which have enjoyed fair earnings due to economic conditions which may prove to have been sporadic rather than permanent. However that may be, such of us lawyers as may be called on to defend these recapture cases will look to the accounting department for the material with which to make our defense. It has long been recognized that the most perplexing problem that confronts the statesman is the problem of securing adequate revenue for public purposes. In other words, the task of the publicist is to devise some system of equitable taxation which will meet the needs of the modern state, with its vastly increased expenditures, due partly to enlarged public activities and partly to extravagance in the administration of governmental affairs. It was aptly and tersely said by the great Chief Justice Marshall that the power to tax is the power to destroy.

Railroads Bear Brunt of Taxation

In recent times, there has been an apparently irresistible tendency on the part of State, Municipal and other local authorities to expend huge sums of borrowed money in costly public improvements, the funds for which have been readily secured by the sale of tax free securities. This policy has been doubly burdensome to the ordinary taxpayer. Not only has it vastly increased the amount which must be annually expended for interest payments, but it has withdrawn from the field of taxation large amounts of capital invested in governmental obligations that no longer make contribution to the expenses of the state. As a result, those charged with the responsibility of raising public revenue are driven to devise new, strange, and drastic systems of taxation that constantly drain the resources of the taxpayer until he is beside himself with perplexity. Driven almost to despair by the constantly mounting size of his tax bill, the average citizen, whether he be farmer, or laborer, or merchant or professional man, cries out in anguished protest against the tax burden, and threatens with political destruction the unhappy legislator who votes to increase his burden. The consequence is that the legislator or tax commissioner yields to the temptation to lay the increased burden upon corporations, especially public service companies, including transportation agencies, who are conceived to be without the ability or inclination to retaliate at the polls. As a result, we are face to face with conditions that are truly alarming. When we recall that railroad taxes in 1929 amounted to more than $400,000,000, or $1,103,000 a day; that for every $100 taken in by the railroads in 1929 $6.54 was paid out in taxes; that for the past eight years the average yearly payment for taxes substantially exceeds the average yearly amount expended for dividends to stockholders, we can catch at least a glimpse of the dimensions of the tax problem as it confronts those of us who are interested in the railroad industry.

It may be said, however, that the railroad managements should not complain since the burden falls ultimately upon the rate payers, who in the long run will be called upon to bear the increased expense in the form of increased freight and passenger rates. But this argument, while it may be beautiful in theory, does not find support when it comes to a practical application. In these days of motor and water competition, the latter, at least, largely exempt from taxation by reason of its being a government owned and operated facility, it is often out of the question, even if the regulating authorities would permit, for railroads to adjust their rates upward to take care of increased taxes. It is too often the case that the added expense must be borne by the stockholders without opportunity to recoup their losses.

In one state where the Illinois Central has lately been driven to seek redress in the federal court, it was found that whereas it was the settled policy of the state taxing authorities to assess ordinary property at 37 per cent of its value, the property of the Illinois Central was assessed at a figure which represents 75 per cent of its value upon any basis of valuation that can be considered fair. In another state, we are subjected not only to an ordinary property tax based upon a relatively excessive valuation, but we are confronted with an increased privilege tax, a burdensome state income tax most discriminately administered, with a franchise tax, and with a sales tax. We are all familiar with the policy which is

widely prevalent of organizing drainage districts of no benefit to railroad property but the expenses of which, under one device or another, the railroads are called upon to bear. We are also familiar with special school districts laid out in such eccentric fashion that they impose inequal and unjust burdens upon the railroads.

In some cases, in our experience, the districts are real panhandles, with an expensive bridge across the Ohio River as the handle. These rather gloomy observations are a prelude for my conclusion that in this matter of taxation, if the railroads are not to be swallowed up, they must fight either in the courts or in the forum of enlightened public opinion. And there again, if the lawyers must take the lead, as would appear to be necessary, particularly if relief is sought in the courts, recourse must be had to the accounting department for the information essential to make out a case. For success in such a litigation depends first of all upon the value of the property for tax purposes. Ordinarily, this value may be said to be the sale or exchange value of the property. The courts in dealing with such a valuation give great weight to a figure arrived at by capitalizing net earnings, and some weight as well to the average over a term of years of the market value of outstanding securities. These data so essential to the lawyer's handling of a tax case, only the accounting department can adequately supply. Of course, when it comes to income taxes, whether state or federal, the questions involved are purely accounting. Here the lawyer must not merely lean upon the accountant; it would be more accurate to say that he must actually mount and ride. In the adjustment of federal income taxes, for instance, the handling of which depends upon a large body of technical and administrative rulings, the lawyer can do little except to contribute the benefit of his training and skill to the arrangement and presentation of material.

Address of President Edwards

The trend is toward making standardization an active principle in every field of business, and this association has been a pioneer in that movement. We must continue in the front of the procession. Every accounting officer should constantly discharge the obligation to have his forms and methods conform to the standard practices.

The heads of the accounting departments have, in the evolution of railroad organizations, advanced from mere recorders to the status of important administrative officers. They have become analysts and advisers in nearly every phase of the railroad industry. Every transaction on a railroad that affects revenues, expenditures or statistics, requires a report of some kind to the accounting department, which must run its course and contribute to the final summary of results. While emphasizing the importance of the accounting department, this also enhances its opportunities for useful and helpful service. Unceasing study of the facts and forces affecting the railroad enterprise is essential to lasting success in furnishing efficient service to the public.

Every record maintained in a railway accounting office has a value far beyond its disclosure of present-day transactions, and while we write into the accounts the story of service and results, it is obvious that the mere mechanical art of summing up the facts and setting them down on paper is only a part of the functions of accounting. These records contribute to the history of the company's operations.

The day of the jack-of-all-trades has come and gone. We live in an age of the specialist for almost every business and profession. Business activities embracing mergers and mass production inevitably call for specialized abilities to keep apace with research and progress. In tune with those developments, railway accounting becomes a profession of specialists. It may be worth while to know what we are, but of far greater importance is to work and plan for what we shall be. Much depends upon our vision and initiative.

In order to maintain a modernized status and meeting the growing demands of consumers, business has had to resort to group action and responsibilities. Individual and collective efforts are required to keep the business moving forward. The job of piloting through the reefs a large railroad industry competitive only as to service, is not a light responsibility and demands the best thought and efforts of all concerned. Some day it may become possible to record man value as well as property value.

What Is Depreciation?

Depreciation—what a torrential rain of words and theories this one word has provoked! Whether we are in the storm or whether we view it from afar off and in the protection of shelter, we should not lose sight of the fundamentals. The term "Depreciation" in common usage, admits of several definitions, depending upon the purpose of its use. Strictly speaking, it imports a decline in value, but in railroad accounting its use is generally applied for purpose of accruing currently, through charges to Operating Expenses, a reserve for retirement of property, which cannot be drawn upon for any other purpose.

A little over twenty years ago, when the Interstate Commerce Commission on its own initiative prescribed depreciation accounting for railroad equipment, conditions were similar—and yet quite different in some respects—from the present situation. The difference consists chiefly in valuation features which did not exist at that time, but which quite solidly confront the railroads now, and from them has sprung the depreciation question in a more serious and far reaching aspect.

In 1924 the Interstate Commerce Commission continued mandatory depreciation accounting for equipment and instituted optional depreciation accounting for fixed structures. At that time, the Railway Accounting Officers Association expressed itself as being of the opinion that depreciation is not an accounting matter. That expression still holds good, at least to the extent that the determination of whether and how depreciation should be manifested is not accounting; but if and when these questions are decided authoritatively and affirmatively, depreciation must inevitably become accounting as a means of being currently and regularly recorded. We must be ready, able and willing to deal with our opportunities in that connection.

During the past few years, extended hearings have been held by the Interstate Commerce Commission on the matter of depreciation referred to in the Interstate Commerce Act. The subject is now before the Commission in Case 15,100 for its decision.

The plan of depreciation accounting set forth in the proposed report and order in this case is believed by the railroads to be fundamentally unsound, because it contemplates that amounts set up thereunder would be utilized for two purposes not closely related: One, for the replacement of property worn out or otherwise retired from service, and the other to produce a theoretical value of the service life exhausted, for use in arriving at a valuation upon which to gage rates to be charged the public for transportation services.

The general theory advanced is that railroad property is gradually being consumed in service; that the serviceable life and salvage value of the various property elements can be ascertained with sufficient accuracy for such accounting purposes, and that uniform charges to Operating Expenses should be made currently to offset the alleged service value consumed.

No Depreciation in Service Efficiency

On the other hand, the railroads deny that the straight-line age-life method of depreciation can determine the actual depreciation of any carrier property, because the life of a standard railroad, intended for continuous operation, is indefinite, and so long as it is maintained in a condition as a whole, to efficiently meet all the demands of service, there is at no time a known or ascertainable loss in its service value.

Before, during, and after all has been said by the proponents of every theory in this connection, it must be accepted as fundamental that there are two separate and distinct things called depreciation. One is an accounting expediency for property retirement purposes. The other is depreciation on value for other purposes which can only be determined by actual inspection. Each has no necessary relation to the other. Recognition of that distinction is of paramount importance in any discussion or consideration of depreciation for railroads.

Replacement Accounting Avoids Error

Replacement accounting, if applied to the railroads, would dispose of depreciation and prevent some economic and accounting developments that must otherwise, eventually, become of serious consequence to the railroads and the public. The existing practices of carriers in accounting for property retired and replaced, result, obviously, in emphasizing dollars rather than property, with the pyramiding of the property accounts as a necessary evil. This process would go on as long as there are rising prices, but if and when a period of lower prices is reached, the pyramided structure will tremble—a result that causes misgivings in the minds of forward-looking railroad men.

Under replacement accounting, when property is replaced, the charge would be made to Operating Expenses; the prop-

erty accounts would continue to reflect the original cost and, therefore, would not be inflated in periods of rising prices, nor deflated in periods of lowering prices.

The year gone by has witnessed the continuation of efforts to ascertain the value of railroads under the guidance of the Interstate Commerce Commission. Large sums of money have been, and are yet being expended to meet the valuation requirements. Whether the attempt to determine the value of railroads is viewed as alarming and disappointing, or worthy of pride and commendation, let us hope that the difficulties of the past will not prove minor compared to those with which the future may have to reckon. The final outcome is yet too far afield for a reliable forecast as to whether the undertaking is wise or otherwise, but this much has been determined with certainty, that it is a gigantic job and frightfully expensive.

A Danger in the Pension Situation

The pension question should be giving concern to railroads. Amounts being paid out annually for pensions to superannuated and disabled employees grow apace, and the peak will not be reached for many years to come. The matured liability on those who are now on the retired list and drawing pensions is very large, but this is only one of the phases causing concern. The accruing liability on employees still in active service who will in due course become eligible for retirement runs into staggeringly large figures and creates a problem that must be solved eventually, if not now.

The present plan of charging into Operating Expenses only amounts actually paid out for pensions does not fasten upon current operation, its full share of the pension responsibility, for the reason that past operations have received the benefit from the active service of those now on the pension rolls, while current operations are carrying the burden of the pension payments to them. On the other hand, current operations are receiving the benefit of services from employees now in active service who will be retired at some future time, and provisions should be made currently for the eventual pension payments on some reasonable actuarial basis.

Effective November 23, 1928, the Interstate Commerce Commission issued an order adding a note to Operating Expense Primary Account 457 with evident intention of meeting the existing situation, but made it impracticable of application by conditions imposed precedent to the accrual of a pension reserve. This order affords the alternative of creating a pension reserve or a pension trust fund through charging Operating Expenses, but only when the carrier has definitely undertaken by contract to pay pensions to retired employees. It provides further that if such a plan is established, thereafter all further payments to employees then on the pension rolls shall be charged to Profit and Loss.

Accounting Should Reflect, Not Govern, Practice

The contractual requirement is objectionable and unnecessary because the reserve can be restricted to the one use. The purpose of accounting regulations issued by the Interstate Commerce Commission should be to reflect what is done and not to set up requirements unrelated to accounting such as the making of contracts to be enforced through the means of accounting regulations. The question whether it is a legal or moral obligation to continue paying pensions once a plan is established by a railroad system should hardly be involved in accounting regulations nor in efforts to protect the reserve. The Profit and Loss requirement for payments to existing pensioners seems unjust because the classification has limited the Operating Expense charges to actual payments. It should be permissible to continue charging Operating Expenses with the actual payments to such pensioners until the full amount of the liability has been absorbed.

Cost Accounting Proposals a Rehash of Discarded Theories

The Interstate Commerce Commission has held a public hearing on the revision of the accounting classifications. That hearing is recorded as Ex Parte 91. It was intended to relate to the revision of the accounting classifications, but developed into an extensive discussion on the subject of cost accounting, somewhat to the surprise of railroad people. Cost accounting is, apparently, presumed by some to possess magic qualities, but exposed to the pitiless spotlight of a public hearing, it turned out, in its possible application to the railroads, to be merely a rehash of theories familiar to well informed railroad accounting officers and long ago discarded after experimentation.

While the railroads have not sought a revision of the accounting classifications, this association will gladly join in any revision of these classifications that may be undertaken by the Commission, if and when the Commission decides that the classifications should be revised. The Railway Accounting Officers Association advocates simplification in railroad accounting, and urges that the usefulness of results produced in the accounting be stressed. Insufficient as well as intricate and over-complicated systems of accounts eventually destroy themselves through burdensome requirements and unavoidable inaccuracies.

Highway, Waterway and Airway Accountants Welcomed in R. A. O. A.

It seems pertinent to bring attention to the existing qualifications for membership in this Association. Article III of our constitution provides that accounting officers and chiefs of all, or any, of the various departments of accounts of all bona fide common carriers, shall be eligible to active membership. At the time this provision was written, common carriers were almost wholly limited to rail and water routes. Today we have in addition, highway carriers and airway carriers. As the carriage of freight and passenger traffic calls for similar accounting, whether by rail, water, highway or airway, the thought has come to me that we might, with propriety, invite the accounting officers of highway and air lines into our membership, and establish standing Committees to handle their problems. The provision of our constitution is now broad enough to embrace any common carrier, and it seems merely necessary to recognize that the accounting officers of highway carriers and airway carriers should become members.

The problem of simplified divisions for the apportionment of freight revenue has not yet been wholly solved, but much has been accomplished and more is in prospect through the accounting officers and traffic officers. The subject must not become dormant. It should be kept ever active until the desired results are obtained. Efforts looking toward the reduction of undercharges and overcharges have been continued during the year with promising success. Since our last annual meeting, 34 new members have been admitted to this Association, and we now have a total active membership of 1,100. Pursuant to recommendation of President Johnson last year, your Executive Committee authorized the issuance of "Railway Accounting Procedure" in loose leaf form. So far as I am aware, this is the first publication of our association to be issued loose leaf. Substantial economy will be realized in due course from this arrangement.

Tribute to Professor Woodson

I join my predecessors in attesting that our office of secretary is being conducted with marked efficiency. Secretary Woodson is thoroughly versed in the affairs of the association, and bears no little share in handling its affairs. It is to his credit and should be generally known, that he has qualified as an attorney-at-law. He ably acted as our counsel in the accounting revision case, Ex Parte 91, before the Interstate Commerce Commission.

Committee Reports

The most animated discussion in the presentation of committee reports arose in connection with a recommendation of the Committee on Freight Accounts. This recommendation had to do with a proposal that an appeal committee be set up to which litigants in a freight accounting arbitration case could have recourse in the event of dissatisfaction with a finding by the arbitration committee. The recommendation of the committee, as printed in the Agenda for the meeting, was unfavorable to this proposal. However, at the committee meeting on the day preceding the opening of the convention the committee experienced a change of heart and recommended that the appeal committee be set up—to have jurisdiction, however, only in cases arising subsequent to its formation and not having retroactive powers over matters already decided by arbitration. The latter stipulation, eliminating all retroactive features, did not appeal at all to one active member of the freight accounts committee, who related how an arbitration case had recently been decided against his interests for which he was not pleading especially, but he pointed out that the same thing might happen to any other road at any time. A score or more of rather

decided, and not altogether harmonious, opinions were expressed on the subject. Some insisted on the retroactive feature. Others wished for the freight committee to confer among themselves and bring in another recommendation on the following day. Others desired that the retroactive feature apply only for the three-year period now allowed for the settlement of freight accounting disputes. The discussion was finally ended by referring the question back to the committee for further study and report next year. In any event, sentiment in favor of the establishment of an appeal committee seemed unanimous—at least there was no attack on that idea.

The report of the executive committee was presented by Secretary Woodson. There were no exceptions taken to the report as published in the Agenda for the meeting saving a motion to restore the practice of printing the names of association members in the Agenda classified by companies as well as by their surnames in alphabetical order. Honorary memberships were bestowed upon the following: John F. Dinkey, former auditor and treasurer, Buffalo, Rochester & Pittsburgh; A. J. County, vice-president, Pennsylvania R. R.; A. L. Hawley, former auditor, El Paso & Southwestern Lines and later assistant general auditor, Southern Pacific; J. H. Shearing, former auditor of passenger receipts, Canadian Pacific; W. F. Dudley, former credit officer, Chicago, Milwaukee, St. Paul & Pacific; W. J. Hobbs, vice president, retired, Boston & Maine; C. E. Hildum, executive vice-president, Lehigh Valley.

"Up Against a Stone Wall" on Pensions

The report of the committee on general accounts was presented by W. B. McKinstry, comptroller, Central of Georgia. There were a few changes made in the report of this committee from the way it was presented in the Agenda. The sub-committee on wage statistics asked to be discharged. A proposal that the detailed commodity statistics be simplified, reported in the Agenda as still being under consideration by the committee was reported upon unfavorably. This committee has named a sub-committee to study and report later on a proposal advanced by F. V. Whiting, general claims attorney, New York Central, which would charge operating expenses each year with accrued liability for pensions on a sound actuarial basis rather than simply the actual annual outlay. When this subject was reported, F. A. Barnes, assistant director of the Bureau of Accounts of the Interstate Commerce Commission, stated that there should be some contractual feature in pension plans to insure the actual payment of pensions once they had been charged. He added that if the committee could not comprehend this necessity he feared it was "up against a stone wall."

The report of the committee on freight accounts was presented by Chairman W. H. Malcolm (auditor of freight receipts, Missouri Pacific). Aside from the debate on the subject of the formation of an appeal committee, already referred to, there was little dissent or change from the report as it appeared in the Agenda. On the subject of proposed new rules to govern the issuance and accomplishment of bills of lading proposed by the Railway Treasury Officers Association, the committee announced that it would carry the subject over for further study and would arrange to confer with the Treasury Association.

Chairman R. C. Bromm (auditor passenger accounts, New York Central) presented the report of the committee on passenger accounts. The only change in the report of this committee from its appearance in the Agenda was the recall of its action relative to accounting terminology with reference to reductions allowed to the federal government and the continuation of this subject on its calendar. An instance of problems in accounting arising from recent developments in the transportation industry and the willingness of the railroads to co-operate with other forms of transport was a question reported upon by the committee which had to do with the issuance of railroad tickets on order of air line pilots (in the event of planes not being able to complete their trips by air).

Some Interesting Disbursement Problems

J. Kennedy (auditor of disbursements, Southern Pacific), chairman of the committee on disbursement accounts presented that body's report. The report included rather detailed discussion on accounting problems arising in connection with the operation of sand and gravel pits and proper forms for payrolls. The Southern Pacific's plan for the unit pricing of material was described in a paper by Mr. Kennedy which was received by the committee as information. The rather fine distinction necessary in accounting for the expense of painting the name of a railroad on one of its bridges—whether to charge to road and equipment or advertising—was discussed. Accounting for the capital and operating costs of motor trucks handling both revenue and company freight was also dealt with. The term "accounting machines" was substituted for that of "tabulating machines" in the announcement of a study being undertaken regarding the uses of these machines in railroad work. Two subjects in addition to those published in the Agenda were reported.

Other Committee Reports

The report of the terminal companies' accounts committee was presented by C. T. Pennebaker (auditor, Union Railway, Memphis, Tenn.) in the absence of Chairman Flispart (secretary and auditor, Kentucky & Indiana Terminal). Mr. Pennebaker stressed the fact that while this committee reported formally upon only three subjects, nevertheless at its meetings it had considered informally a great variety of others and that the committee was providing a useful common meeting ground for the terminal accountants.

W. R. Evans (auditor, Great Lakes Transit Corporation) presented the report of the committee on water line accounting in the absence of Chairman T. W. Kennedy (auditor, Merchants & Miners Transportation Co.). The report on overcharge and agency relief claim rules was presented by Chairman H. C. Holzbach (auditor freight accounts, Chicago, Burlington & Quincy). This latter committee made two slight changes in its report after the publication of the Agenda. The committees on valuation accounting, conference with the Treasury Officers Association and conference with the Mechanical Division, made no reports. The report of the committee on statistics, presented by Chairman R. B. Ferguson (general auditor, Delaware, Lackawanna & Western) gave as information a formula developed by the Mechanical Division of the A.R.A. co-operating with Dr. M. O. Lorenz, director of the Bureau of Statistics of the Interstate Commerce Commission to show tractive effort of locomotive boosters. An answer given by this committee to a questionnaire from Dr. Lorenz on clarifying the definition of unserviceable locomotives was accepted by the convention only as a recommendation of the committee and was referred to the committee on general accounts which already has this subject on its calendar.

The committee on accounts of Class II carriers was presented by Chairman Basse (general auditor, Arkansas Valley Interurban). Mr. Basse stated that only 25 of the Class II and III steam carriers and electric lines had memberships in the association, but that his committee was exerting every effort to bring in new members. Brief reports were presented by A. R. Wood (auditor, St. Louis Southwestern) and Chas. A. Lutz (vice-president, Railway Express Agency) an behalf, respectively, of the committee for conference with the American Association of Passenger Traffic Officers and that to attend the convention of the Association of Public Utility Commissioners. Mr. Lutz stated that a longer report regarding the proceedings of this convention was unnecessary by reason of the narrative account published in the *Railway Age*.

Papers were presented in behalf of the freight and overcharge committees respectively by A. J. Moran, (auditor of freight accounts, Erie) and J. S. Fox (auditor overcharge claims, Chicago & North Western). Abstracts of these papers follow:

A. J. Moran on Station Accounts

One of the problems confronting accounting officers for the past decade has been the plan to be adopted for relieving stations of accounting work by doing such work for a number or all stations at a central point. Two plans are now being followed, one being termed "zone accounting," under which accounting for all stations is handled in one or more zone offices; the other being known as the "bureau plan," which provides for taking into the bureaus work from only such stations at which a pay-roll saving can be effected.

To determine to what extent some such plan has been adopted, a questionnaire was sent to 38 of the large carriers in North America, members of our association, with the following result:

No answer received	3
No plan in operation	15
Zone plan (all stations)	5
Bureau Plan (large stations)	15

Of the 20 operating under zone and bureau plans, 16 performed the work under a "card" plan, i.e. with punched cards and tabulating machines; 4 with the use of other mechanical devices.

As to whether any of the methods now employed would be economical for a particular carrier and if so, whether the zone or bureau plan should be used, depends largely upon local conditions. If a number of large cities are located on the rails of a carrier, economies can undoubtedly be effected by performing the accounting work for the large stations at a central point—the bureau plan—with punched cards and tabulating machines, as the items would be of sufficient volume to make that possible.

Large Stations and Dense Business Required

On the other hand, some carriers have zoned the entire road into one or more accounting offices to increase the efficiency of station accounting, due to the fact that competent station help was not available—the claim being made that a saving has resulted, in that the combined station and general office expenses have been reduced by the adoption of the plan.

Experience has demonstrated that no plan can economically be instituted where carriers with a large mileage through sparsely settled territory, having a great number of one or two man stations and few large stations, or where a short line has only one or two large stations. Therefore in approaching this subject each carrier will have to consider local conditions and if it is found that either of the methods would be advantageous, which of the two plans would better meet the situation.

From the experience derived from the operation of a bureau for seven years and the study given the matter in the past ten years, I am convinced that the bureau plan under certain conditions is the more economical. Furthermore where it is possible to locate the bureau in or adjacent to the freight auditor's office much duplication of work can be avoided and greater economies effected than where the bureaus are located out on the line. It is an established fact in all branches of railroad accounting, that forces specially trained in different branches of the work can accomplish more and a better class of work with greater economy at a central point than if the work is split up into small units.

The fundamental principle of zone or bureau accounting is to relieve the station of accounting work, and the plan generally followed is to take into the bureau or zone office all the station work after the preparation of outbound waybills, freight bills, bills for miscellaneous services and the recording of station collections and disbursements.

Frees Agent for Traffic and Operating Duties

Some of the roads using other than the card plan contend that the agent, by being compelled to build up the station debits and credits, gives more personal attention to outstanding items than under the bureau operation. The fact is that the responsibility of the agent is neither greater nor less whether the debits and credits are set up by him or a bureau, as the cashier's bill rack will in either case represent the outstanding. By relieving agents of building up the daily items to totals, the daily to monthly totals, the checking of cash, the preparation of balance sheets, the balancing of accounts, etc., he is given more time to devote to traffic and operating matters. This brings to mind the old days when original waybills were filed at stations. Many of us at that time felt that the station could not get along without these documents, whereas today, with few exceptions, the original waybills are filed in the office of the freight auditor.

In establishing a plan under a bureau or zone, the foundation can be materially strengthened if zone waybill revision bureaus are provided for in the general plan, whereby the waybills are revised within 24 hours after arrival at destination stations, insuring the freight bill at station and accounting bureau being on a correct basis, obviating the unnecessary work of handling subsequent due bills and corrections.

As the bureau plan with punched cards has been generally adopted by carriers operating station accounting at central points, I will briefly outline this plan which has been successfully operated on our line for the past seven years. Original waybills are revised as to rates and extensions before being sent to the bureau. The stations send to the bureau daily a list which merely shows the opening and closing numbers of outbound waybills, freight bills, miscellaneous bills, etc. to which is attached a copy of station cash sheet showing cash collections by check totals, remittances, cash on hand, etc.

How Work Is Done

A card is punched for each forwarded waybill carrying advances and prepaid for each station and a total obtained which is balanced against the daily report of waybills issued. The latter report is prepared on a combined listing and adding machine. Cards are then placed in open files in freight bill order awaiting clearance through cash collections and disbursements—subsequently reported by station. The total charges on freight bills received from each station daily are brought to a total with a listing or non-listing calculating machine. A card is punched for each waybill showing waybill reference, freight bill number, freight and advances in one amount, and amount of prepaid.

From these punched cards, with the use of a tabulating printer, a daily freight received report is prepared for the general office, which is balanced against the total of freight bills previously explained. This balance also verifies the fact that the freight bills are in accord with the waybills as to the amount to be collected. The cards are then placed in open files in freight bill number order. Cards are also punched from copies of all miscellaneous bills; symbol numbers designating the various classes of service which will permit the bringing together the various items of miscellaneous revenue for daily or monthly reports to the general office. These cards are also placed in open files in bill number order.

The plan provides for a debit or credit card to be cut for every item which is placed in the open file until cleared by collection or disbursement. Daily cash sheets are prepared at stations in duplicate, one copy sent to the bureau with the cashier's memorandums. Upon receipt at the bureau the cards representing the collections are withdrawn from open files and with the use of a gang punch the date of payment is punched on each card. They are then run through the tabulator printer, and a cash sheet made and balanced with the station cash sheet; then placed in the closed files.

For convenience in locating payments at stations and the bureau, all cards representing collections or payments for each station for a given period are sorted in freight bill number order, put through the tabulating printer, and a detailed list prepared, a copy of which is sent to the stations. At the close of each month all cards in open file are run through the tabulating printer, and an uncollected list prepared of all out-

standing items, which is balanced against the debit or credit balance shown on monthly balance sheet for each station.

Checking Outstanding Bills

In order to keep the station in accord with the bureau as to outstanding bills, the station is required at the close of each month to send to the bureau an inventory of all outstanding bills, which is checked against the outstanding list prepared from the cards, any omitted items being added to the station inventory, which is then returned to the station.

When the accounts at stations reported to the bureau are to be examined or transferred by traveling auditors, an outstanding list is very quickly prepared at the bureau. This can be done before or after the traveling auditor commences the examination.

There are many outstanding features in favor of the card plan as against other plans, namely:

1 An absolute control of the station balance is maintained.

2 The volume of items can be increased with a positive decrease in the cost per item.

3 Bureau organizations specializing in this work become expert, which has a distinct bearing on reducing costs in the general office.

To accomplish the best results, the bureaus should be under the absolute jurisdiction of the accounting department, notwithstanding that the expenses are charged to station operation. Further, I am of the opinion that the plan of punched cards with tabulating and sorting machines will not be economical unless a minimum of 40,000 items can be assembled in one bureau. As the volume increases above this number, the expense per item will naturally decrease.

J. S. Fox on Prevention of Claims

This association at the annual meeting at Atlanta, two years ago, recommended:

(1) That each carrier be urged to put in effect on its own line in its own way, some method of determining individual responsibility for preventable claims. (2) That carriers generally be urged to carry into effect some sort of educational campaign in this connection among agents and rate clerks. (3) Also that the president of the R.A.O.A. suggest to the territorial claim conferences that a part of their session be devoted to the prevention of overcharges and undercharges.

Practically all roads have become interested in this subject, and while it is possible some of the lines are more active than others reports to the overcharge committee are of an encouraging nature. We believe that not only are the number of claims being reduced but that the public has become very much interested in the efforts that are being put forth to present proper and correct freight bills in the first instance and thus close the transaction.

The overcharge committee as well as all officers in charge of overcharge claims, evidenced great interest in this subject and have created the needed committees or organization to carry on an educational campaign and gather statistics in connection with the analyzation of claims to determine the causes, establish individual responsibility and call attention to preventable errors.

Necessity for Care in Routing

Overcharge claim officers are handling many claims considered by some not as "overcharge" but claims paid on account of "misrouting." Such claims are frequently a severe penalty for the erring carrier, and owing to the I.C.C's changed views as to responsibilities and the application of the use of the "preferential routing" clause, or the "misroute" clause in tariffs it would seem to be necessary that special attention be given to educating those responsible for furnishing the routes on waybills to see that they conform to the provisions of the bill of lading if the shipper routes his freight, and with tariff requirements when unrouted by shipper.

It is felt that claim prevention work has sufficiently progressed as to warrant the setting up of statistics which of themselves are not only interesting but become valuable information in determining the special causes for claims.

It is thought that the overcharge committee can arrange during the coming year for a centralized bureau or committee on claim prevention, to which statements could be sent for compilation of data which would make very interesting reports, and at the next annual meeting we hope to give you figures showing definite results of our claim prevention activities.

Claim Conferences

Overcharge claim officers have been in attendance during the past year at all accounting and territorial claim conferences and freight claim meetings. All of the freight claim conferences have appointed committees to co-operate with members of the accounting department, and at the freight claim meetings the subject of prevention of overcharge claims is regularly docketed as an assigned subject and is receiving meritorious consideration. Many of these claim conferences with overcharge officers as chairmen of the subcommittees, are asking that the cause of overcharge claim payments be analyzed and submitted to the claim conference in carrying on their work of claim prevention. Your sub-committee is glad to report to you that much has been accomplished through these meetings, and wishes to express its sincere appreciation to all members of the freight claim association for their hearty co-operation.

Claim Bureaus

It has frequently been discussed in the meetings of the overcharge committee that attention should be called to this convention to the need of special attention being given to claims filed by traffic bureaus. A large per cent of the many claims filed by the so-called traffic bureau are declined for the reason that many are filed on mere technicalities, evidence offered when investigated proves unreliable, and many are filed on improper freight bills prepared by careless agents, when in reality the claimants well know there is no overcharge. Many of such bureaus are operated by former railroad employees who are quite familiar with the workings of claim offices.

Other Business

On the afternoon of the second day of the convention an open forum was held at which members and visitors were invited to discuss any subject of interest to the association. P. J. Rickards, assistant accountant of the United Railways of Havana, described briefly some of the railway problems of Cuba. J. C. Clark, pension expert of the Equitable Life Assurance Society, sketched the history of industrial pensions in America and Great Britain, told of the underlying theories involved in various plans and of some of the problems requiring solution.

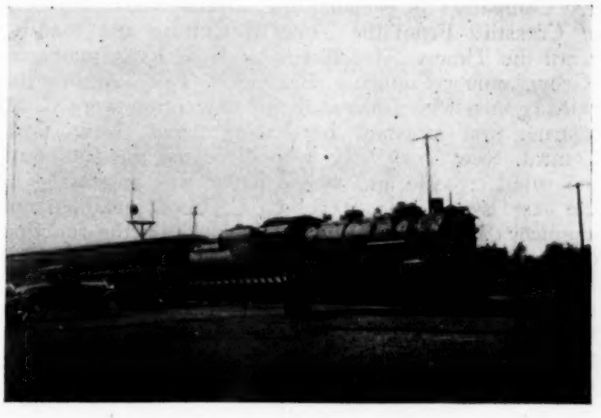
Guests in attendance were given the privilege of the floor. Among these, incidentally, were several representatives of the government services, military traffic officers in particular.

Telegrams of good wishes were sent to several members prevented by illness from attending the convention.

An amendment to the by-laws was adopted changing the fixing of time and place of next meeting to precede election of officers at the closing session, rather than earlier in the course of business.

E. R. Woodson, secretary of the association, it was learned at the convention, has been appointed also professor of wills and administration at the National University Law School, Washington, D. C.

* * *



The Baltimore & Ohio's "Capitol Limited" at Garrett, Ind.

The Changing Crosstie

Producers and consumers study ways of improving quality and insuring permanency of supply of railways second largest material cost

THAT the production of crossties is undergoing as rapid and drastic changes as are occurring in the transportation industry itself and, further, that these changes are of concern to producer and purchaser alike was evident at the twelfth annual convention of the National Association of Railroad Tie Producers which was held at the Hotel Peabody, Memphis, Tenn., on April 29-May 1. Papers were presented by both railway men and producers, all pointing to the production of a better tie and one that will give longer service. The meeting was characterized by a forward-looking attitude, as evidenced by frequent references to the necessity for a policy of reforestation that will insure a permanent supply of timber. The convention was the most successful in the history of the organization, from the standpoint of the practical value of the information presented and also of attendance. All sessions were presided over by F. F. Fonville of the G. W. Signor Tie Company, Shreveport, La., president of the association, assisted by Roy M. Edmonds, secretary-treasurer.

Inspected Ties Ready for Loading

The Association chose as officers for the ensuing year: president, Roscoe Hobbs, president, Hobbs Tie & Timber Co., St. Louis, Mo.; first vice-president, Aubrey L. Clarke, L. A. Clarke & Son, Washington, D. C.; second vice-president, E. E. Pershall, president, T. J. Moss Tie Company, St. Louis, Mo.; and secretary-treasurer, Roy M Edmonds, St. Louis, Mo.; re-elected.

Representing the producer, papers were presented on the Separation of Crossties by Grades and Groups, by Thomas H. Wagner, Jr., southern manager T. J. Moss Tie Company, Shreveport, La., and on the Protection of Crossties From the Time of Cutting and Making Until the Time of Treatment by J. R. Keig, manager, Kirby Lumber Company, Beaumont, Tex. Among the railway men who addressed the convention were C. D. Warne, first assistant purchasing agent, New York Central, New York City, who discussed the future of the wood crosstie and whose paper was abstracted in the last issue, page 1063; C. C. Cook, maintenance engineer, Baltimore & Ohio, who spoke on the function of wood preservation in extending the life of timber; N. W. McGough, treating engineer, Texas & Pacific, who described the seasoning and treating of water oak timber cut from swamp land; C. W. Green, timber treating engineer, New York Central, Toledo, Ohio, who described the proper use of anti-splitting devices, and F. C. Sheehan, office assistant to the purchasing agent of the New York, New Haven & Hartford, New Haven, Conn., who described the manner in which the New Haven railroad has stimulated the production of ties on its line. The annual dinner, on Wednesday evening, was featured by addresses by C. E. Johnston, president of Kansas City Southern on tie production from a railroad standpoint, and M. E. Towner, general purchasing agent of the Western Maryland, who contrasted the conditions existing prior to and during the period of federal control with those which prevail now and whose address was published in the last issue, page 1073.

As in past years, this organization gave considerable attention to the study of marketing conditions. Outstanding in these studies was the report of the Committee on Statistical Information, which was presented by E. E. Pershall, chairman, president, T. J. Moss Tie Company. This report, which consisted of a series of graphs showing the trend of production, shipments, stocks and orders on hand during the year, showed that whereas production was light and stocks were normal early in the year, production is now considerably in excess of demand. These graphs, which are designed to aid producers in keeping production more nearly in line with demand, are prepared from information supplied confidentially to the secretary of the association at frequent intervals, and by him converted into composite curves. The conditions which were shown by these curves aroused a great deal of interest. They were further reflected by more specific descriptions of conditions existing in the various major producing areas.

In the south central states, for instance, production during the first half of 1929 was very light, by reason of the excellent crops and shortage of labor caused by the migration of tie makers to highway work. Increases in prices exerted little effect on production, even though some companies paid higher prices for ties in 1929 than for a number of years. During June and July conditions changed and production continued very heavy throughout the remainder of the year. At the close of the year prices paid for ties in the field averaged approximately 10 cents per tie more for each grade than at the beginning of the year. The demand for ties in this area during 1929 was generally very good. Stocks on hand were average so far as green ties were concerned, but there seemed to be a distinct shortage of dry ties. Taken as a whole, 1929 was a good year, with good demand, average production and satisfactory price levels.

In the southeastern states the crosstie production was little if any greater in 1929 than in 1928, both years being well under the normal of previous years. The chief factor has been the reduced requirements of most of the larger railroads, by reason of the use for the last decade and longer of large percentages of treated ties. Practically all of the roads in this area which purchase right-of-way ties, have been receiving on restricted quotas, although in fair quantities and at reasonable prices. This district also furnishes ties for the territory north of the Ohio river and the East, but the demand from this market has also been less than normal and price competition keen. Having operated on a subnormal basis for two years or longer, production in this area has adjusted itself to demand. Stocks are very low at producing points and would be inadequate to meet any sharp increase in requirements. Weather conditions during the last winter were average and the less than normal rainfall so far this spring has been favorable to production.

In the northeastern states, the demand for dry ties was reported to have been more active in 1929 than in the previous year but strong competition kept prices low until late in the year when stocks were reduced and better prices were offered to stimulate production. In New England prices, demand and production in 1929 approximated those in the preceding year. The output of hardwood ties increased while there is a recession in the production of cedar ties.

The possibility of returning large areas of bottom land in the South to the growing of timber and of then practising selective logging was advocated by G. H. Lentz, silviculturist, Southern Forest Experiment Station, as a means of providing a future supply of timber which should appeal to tie producers. Mr. Lentz stated that 19,000,000 acres of bottom land is available in the states of Louisiana, Mississippi and Arkansas which will not be needed for farming purposes for many years to come. Stands of cottonwood, red gum and oak grow rapidly in this area and where selective logging is practised trees reach merchantable size in a relatively short time.

The Use of Water Oak

Water oak has long been looked on with disfavor by a number of roads. Yet it is being used with success by other lines. One such is the Texas & Pacific. N. W. McGough, treating engineer of this road, pointed out the precautions that must be observed in the use of this timber, in an address in which he spoke in part as follows:

Water oak is one of 35 species of oaks of commercial value in the United States. As its name implies, water oak grows naturally only on moist bottom lands, or on ridges in the immediate vicinity and attains a height of 70 to 80 ft. with a columnar trunk 2 to 3½ ft. in diameter. Its heartwood is light brown, tinged with yellow, and the sapwood is rather thick and lighter colored. The wood is hard and rather close grained, requiring 10 to 12 years to grow one inch in diameter. It is stronger than Southern red oak.

With water oak, as with most timbers from which ties are made, much depends on the condition of the tree when cut, although the major factors are the weather and seasoning conditions subsequent to cutting. Cutting in the early fall and through the winter gives much better timber with less loss in seasoning. Water oak timber should season very slowly.

Water oak cut from swamp lands splits and checks freely in seasoning although this is curtailed by cutting the timber during the fall and winter months. Frequently the checking is of such nature that devices such as S and Z-irons, bolts and bands do not save the tie or make it serviceable. However, by selecting sound timber, by removing it from the woods promptly, by applying anti-splitting devices as soon as possible after cutting, by stacking so as to permit free air circulation but to shed as much rainfall as possible and not permit the hot sunlight to strike the timber too directly, we can get better timber than is commonly found on the top layers of timber piles.

We get a quite satisfactory treatment with water oak, if it is seasoned properly, a treatment quite similar to Southern red oak; if feasible, water oak ties should be segregated from red oak ties, as they require a longer seasoning period than our red oak. It is our practice to treat our oak ties to refusal and water oak ties properly seasoned are penetrated with creosote quite thoroughly.

Anti-Splitting Devices

An analysis of the causes for the removal of ties from track discloses a relatively high percentage chargeable directly to bad splits. This indicates that devices improperly designed or incorrectly applied, or, perhaps, no device at all, had been used for protection. These facts led C. W. Green, timber treating engineer of the New York Central Lines, Toledo, Ohio, to give special consideration to anti-splitting devices. The results of his studies were set forth in part as follows:

It has been observed in ties removed from track that little excessive splitting is manifest on the under side or face which has set in the ballast, indicating that the area to which the most protection should be given is the face or upper section of the tie.

As all ties are not subject to splitting and it is not considered necessary by many to apply devices to every tie used, or to apply more than one device in each end in many cases, the problem becomes one of following a tie that is protected with a device, through from the seasoning yard so that it will be properly laid in track. With the universal use of tie adzing and boring mills, it would appear possible to give such ties a distinguishing mark to insure that they are adzed on the face that requires the most protection. By this method the proper placing of the tie in track may be insured.

The proper use of anti-splitting devices may be set up under three important headings:

(1) Determine the design of device best suited to meet service conditions.
(2) Apply the device as soon as the need is apparent during the seasoning period, by competent labor properly supervised by a foreman or an inspector who is thoroughly familiar with the problem.
(3) Follow each tie through the adzing and boring mills so that the protected face will receive the adzing and thus guarantee its proper placing in track.

I quote from the conclusions of a subcommittee of the Tie committee of the American Railway Engineering Association on anti-splitting devices.

"Irons or devices should be placed to cross at right angles the greatest possible number of radial lines of the wood.

"Irons should have sufficient stiffness to permit driving into the hardest wood in the Standard Specifications for Ties.

"Irons of sufficient stiffness to permit driving are of sufficient strength to withstand seasoning stresses. Many irons of excessive gage (thickness) are being used with consequent undesirable and unnecessary damage to the wood."

How the Santa Fe Protects Its Crossties In the Woods

The Santa Fe has long been regarded as a leading exponent of those practices conducive to maximum tie life. It was one of the first roads to undertake the treatment of its ties with preservatives on a large scale. Its precautionary measures start far back of the treating plant, however, as related by J. R. Kieg, manager of the Kirby Lumber Company, Beaumont, Tex., which company has long produced ties exclusively for the Santa Fe in Texas and Louisiana. Those practices which have contributed so much to the delivery of a sound tie to the treating retort were set forth by Mr. Kieg as follows:

The protection of crossties from the time of cutting and making until the time of treatment can be considered one of the principal factors in securing long tie service life. As a general proposition, the quicker the ties are brought out of the woods and stored in a dry place, the less chance there is for decay.

We have a rule that all ties must be hauled to the right-of-way as soon as possible after they are made, and our specifications state that they must be delivered within 30 days. This rule has been enforced for a number of years and is very effective. Occasionally we find a violation, but if it is dealt with firmly it acts as an object lesson and there is very rarely trouble from this source.

There have been instances where we deviated from this rule but only when satisfactory proof was offered that the ties could not be hauled to the track sooner, and that they had been well taken care of while stored in the woods. Cases of this kind are the exception and not the rule. Once the tie maker and the tie hauler understand that this rule is to be enforced, there is rarely an instance where it is violated, although we may have to be severe at first in order to make an impression. This practice might be regarded as impractical in some parts of the country but it has worked out quite successfully for us and we believe that the beneficial results are borne out to a large degree by the consequent satisfactory tie life in the track.

We operate in the territory adjacent to the Santa Fe in East Texas and Louisiana. All of the ties purchased are used by the Santa Fe and are inspected by Santa Fe inspectors. These men are very rigid in their inspections and follow the rules as to the proper protection against decay before the ties are hauled to the track. They are very firm in this feature, which sometimes works somewhat a hardship on the tie maker, the tie hauler, and the owner of stumpage, but at the same time it is necessary to be firm in matters of this kind, and we find that being firm gets results quicker than any other method. This is a very important factor in securing the proper protection of crossties previous to their delivery to the treating plant.

When ties are placed on the yard for inspection, it is required that they be piled two and seven, with ample space between stacks to facilitate inspection. The stacks must not be placed closer than three feet apart and the two bottom ties must be elevated at least six inches from the ground. At times in the past we have had difficulty in enforcing this rule. The tie haulers would insist on putting these ties in direct contact with the ground, thus increasing the possibility of decay. In order to correct this, the two bottom ties, and in some instances the entire stack, is refused. This method has the effect of curing this practice and we now have little difficulty from this standpoint. At times we have also had trouble with tie haulers using previously-inspected ties as ground stringers. This was also corrected by the inspector's refusal to accept the entire stack until they had been properly stacked.

We also make it a point to eliminate the necessity of tie stacks being placed in water or damp places at tie yards but it is sometimes difficult to avoid this on account of occasional congestion at station yards during times of heavy production.

At the time of inspection, ties are stenciled on one end to show the grade, inspector's symbol, and the month of inspection. On the front of each stack are scaled the date of inspection, the stack number, the number of each grade of ties and the total number of ties in the stack. Each kind of wood must be stacked by itself.

Ties are loaded for the treating plant as soon as possible after they are inspected. No attempt is made purposely to leave them on the right-of-way in order to reduce weight, and as a check on this practice the Santa Fe makes a record of the inspected ties on the right of way after each month's work, so that it is known at all times just how many ties are inspected ready to load, also the month in which they were inspected. We make it a point to load all ties before they have been on the right-of-way 60 days. This rule is adhered to diligently and is quite successful except occasionally in periods of extremely bad weather or very heavy production.

Ties are loaded by both tie train and shoulder or station gangs. We use one tie train and three station gangs. We have found that this is more effective than the use of two trains. The tie train takes care of production generally between stations and the station gangs take care of congestion at stations. This combination, coupled with the excellent co-operation of the operating department of the Santa Fe makes it possible to load ties out promptly and to load them in line with the wishes of the treating department. In order to facilitate the unloading at the treating plant the cars are loaded so far as possible with but one kind of wood and one month's inspection in each car.

Prompt delivery of ties to the treating plant is, in our judgment, essential to the proper protection of crossties from the time of cutting and making until the time of treatment. After the ties arrive at the treating plant those who understand the importance of proper seasoning conditions are in control of the situation.

The Santa Fe has been foremost in realizing the importance of exercising complete control over the production of ties from the time they are made until they are delivered to the plant. Further, to insure the delivery of ties to the tie treating plant in proper condition, the railroad company has built 400 open top cars to be used for tie loading only. These cars are all-steel, 80,000 lb. capacity, and might be termed "skeleton" cars, as there are just enough side supports to hold the ties in place. They will hold from 450 to 550 ties, depending on the class of tie and whether hewn or sawn. These cars facilitate easy loading and unloading and they afford proper circulation of air through the ties, thus discouraging the appearance of white mould while in transportation. We also use box cars for this loading but they are employed only when there is a shortage of the "skeleton" cars or an oversupply of box cars at certain points.

The department which we operate is under the complete direction of the Santa Fe purchasing department as to purchasing policy. The inspection forces are also under the direction of the purchasing department and it has been at all times the policy to maintain a strict enforcement of the rules and regulations covering inspections.

It has been found more satisfactory to control production by changing price than by any other method. It has not been considered advisable to attempt to control production by any change in the inspection rules or in the specifications. By carrying out this policy, we believe that we have fuller co-operation of the tie maker, the tie hauler, and the owner of stumpage, and that a more complete control is had of the ties from the time they are made until they are ready for treatment.

It is necessary that ideal seasoning conditions be had at the treating plants, but if ties are to have the proper protection from the time of cutting and making until the time of treatment they must be properly and promptly handled from the woods and on the right-of-way to the treating plant so that there will be the least possible opportunity for the ever-present fungi to germinate.

We have cause to believe that the wisdom of this policy has been demonstrated by the long service life obtained from ties used by the Santa Fe.

Separation by Grades and Groups

A problem that has been engaging the attention of the railways and tie producers alike in recent years is that of the separation of ties by grades and species. Although involving added handling by the producer, which he was not altogether willing to undertake at first, it is now recognized as a necessary step in the merchandising of the modern crosstie. The attitude of the more progressive producers toward this refinement in delivery practices was presented by Thomas H. Wagner, Jr., southern manager of the T. J. Moss Tie Company, Shreveport, La., in a paper which follows in part:

Twenty-five or 30 years ago there was but one group—white oak. And from the point of view of the producer, ideal separation was achieved by giving to that railroad which paid the highest price and imposed the most lenient inspection the first selection of the ties; then the road with the next best price went through them, and so on until the ties were all separated and all that was left was a little fire wood. Today, our problem is to divide our ties in the manner most acceptable to the railroads, and in such a way that they may be handled with greater economy by the roads and ourselves. Incidentally, the tie industry is competitive to such a degree that any economy effected by the producers is, through necessity, promptly passed on to the railroads.

The closer to the stump that separation can be made, the better. Most maintenance officers of Class I railroads have use for all grades of ties, from serviceable rejects to grade fives, and many of them use several species. But they cannot have them all in one car. They have a place for the tie seven inches thick and a place for the tie six inches thick, a place for pine and a place for hardwoods. However, the right-of-way is no place to make this separation.

Similarly, the treating plant is not the point for making these

essential divisions. Separation is obviously easiest to accomplish where one is dealing with the smallest number of units. Three hundred ties a week may be a big production at "Dogwood Spur." But a mixed carload of three hundred ties is decidedly the fly in the ointment to an harassed plant-yard-foreman in the busy season. Forty to 50 cars a day roll in on him, each of which must be placed with its kind as to species, age and grade.

The separation of ties into piles of one species group is universally practised. However, on countless yards one finds a general mixture of piles of gum, oak and pine. This practice should be discontinued and a separate section designated in each yard for each species. Where a yard has a resident buyer, as is the case in some instances, this is readily accomplished, but there are many yards, some isolated but of considerable size, which have no resident buyer, but are visited by the inspector at regular weekly or bi-weekly intervals. Such yards are the most difficult to regulate. Some little "flour and bacon" tie maker will haul in a load of 12 ties in 3 different species. He will make three little piles next to each other, write his name on them and depart for home. A territory man can gage the approximate percentage of each species which will come out on his various yards and should divide his yards accordingly, reserving a section for each species. The larger the yard, the greater is the need for this segregation of species.

Dividing a yard and getting the ties placed accordingly are two very different matters. Such innovations take time, and the early institution of that final argument —"No check 'till they are right," is recommended as an accelerator.

Separation of ties in accordance with their age is, of course, important to insure uniform seasoning prior to treatment. For the most part, this separation is pretty well maintained in the producing territory.

When ties are to be seasoned on the right-of-way, the piles should be dated. The dry tie of a field man all too often fails to coincide with the dry tie of the treating inspector and must be yarded for additional seasoning on receipt at the plant. Dating should counteract the territory man's fear of normal discoloration in a partially seasoned tie.

The most helpful separation to the railroads and the one which to my mind should result in the greatest saving to the producer is the separation of grades. Ties on the territory yards should be separated in accordance with thickness, those seven inches, or grades four and five, being stacked together and ties six inches, or grades one, two and three, together. Most of the railroads distribute the treated ties in these two general classifications and consequently prefer this separation when the ties are loaded to the plant. A number of roads purchase only ties seven inches thick or only six inches thick. In such instances, the saving from yard separation to the railroad in inspection cost and to the producer in loading and in rehandling costs is obvious. Here again it will take some time to educate the haulers generally to separate their ties intelligently.

There are two influences which are operating strongly to simplify this matter of separation—the tremendous increase in good roads and the growing percentage of sawn ties being produced. Nowadays with gravel and concrete roads extending almost universally along our railroads, truck haulers with three times the load go farther in half an hour than the old wagons used to in half a day. This enables us to practice some selectivity in the yards where we will buy ties. We can now concentrate on larger, better regulated yards and secure the same number of ties at one station than we formerly received at half a dozen stations.

It seems obvious that hewn tie production is waning. The United States Department of Agriculture reports that of the ties treated in the United States in 1928, 31,790,551 were sawn. Today a big producing operation connotes saw mills. In such operations separation as to both grades and species is instituted at the source. The maintenance of this separation to the track then becomes a comparatively simple matter. As the ties come from the saw, they are loaded out on dolly-buggies and distributed in seven-inch thick or six-inch thick, 8 ft. 6 in. or 8 ft. piles, as the case may be. The ties are stacked on edge one above the other on sound strips in large continuous piles of a thousand or more. They are spaced with a minimum of four inches between them. One side of all the piles is the line side and one can tell at a glance when a tie is of bad length. The result is a lot of ties which can be readily and accurately inspected and which are stacked in a manner to season rapidly without damaging. Mills such as this with an entirely separated stock of 20,000 or more ties are not uncommon.

A complete separation of grades and groups is bound to come because it is economically sound, admitting of more rapid and efficient handling of our product from tree to track and giving to the railroads a better distribution.

Wood Preservation— The Savior of the Crosstie

That wood preservation first demonstrated its economy with crossties is common knowledge. That the wood crosstie would now be facing replacement by substitute materials, if it had not been for preservation, is not so generally realized. This latter fact was pointed out by C. C. Cook, maintenance engineer on the Baltimore & Ohio, Baltimore, Md., and president of the American Wood Preservers' Association, in a paper which is reproduced in part as follows:

For the tie producer, maximum profit arises from increased renewals; for the patron of wood preservation it arises from decreased renewals. Where, then, is there ground for mutual profit? In the interest of a sympathetic hearing, that question should be given prompt answer, and I venture to suggest it in the statement that if wood preservation had not come to the rescue of the producers of crossties of wood, the signs of annihilation would long since have been apparent to your industry.

The promotion of substitutes such as steel, concrete, and composite materials even now persists to an extent that probably is not realized outside the offices of the maintenance of way officers of the railroads who are constantly importuned to give them a hearing and a trial. Who today, in contemplation of the demands for economic rail transportation, imposing ever-increasing weights of locomotives and cars, can say that serious competition from these substitute materials may not develop?

In a report to be submitted to the International Railway Congress in Madrid this month it was stated that "it does not appear unreasonable to hope that, *from the point of economy,* it would be of advantage to use reinforced concrete sleepers on secondary lines. . . ." On lines carrying heavy, fast and numerous trains the continuance of experiments is suggested.

In order to see the relation between that situation and the one in our own country, let us view the costs of our ties, taking an average condition in the Middle Atlantic and Central states. I will give both the first cost of the tie ready for placing in track and the capitalized cost, which includes the first cost and the capitalized value of costs required for perpetual renewal:

For the untreated tie:	
First cost	$1.50
Capitalized cost—10 yrs. life	3.89
For the treated tie:	
First cost	$1.80
Capitalized cost—22 yrs. life	2.74

A composite tie meeting the demands of heavier loads in this country would seem to have possibility of development on the basis of:

First cost	$3.00
Capitalized cost—30 yrs. life	3.90

When considering the difficulty of securing 10 years life from untreated timber now available for ties, and the advantages accruing to ties of long service due to non-disturbance of the track surface, the composite tie, though not threatening the treated tie, is seen to have every probability of displacing the untreated tie

Preservation of timber is essential to the continuance of wood as the one superior article for railroad ties. That preservation, too, must be of a superior kind. The facts noted above leave small margin for inferior treatments.

The first report of the total number of ties used by Class I carriers appears in the Interstate Commerce Commission records for 1917. If 10 years be taken as a fair figure for the life of untreated ties, it is apparent that it was approximately only the treated ties used prior to 1907 that would result in reducing the 1917 renewals. These ties did not represent any considerable proportion of the total renewals of those earlier years. It may then be said that the renewal figures for 1917 were approximately representative of the demands of the untreated tie situation. The record shows:

Total ties used in replacements	79,070,201
Total miles operated—all tracks	368,683
Renewals per operated mile	214

A high point in replacements was reached in 1920 with a total of 86,829,309 and again in 1922 when the total was 86,641,834. Probably by the time that this latter year was reached, the former installations of treated ties were making themselves felt. At any rate, it evidently marks the peak of crosstie requirements.

The year 1922 shows:

Total ties used in replacements	86,641,834
Total miles operated—all tracks	382,143
Renewals per operated mile	227

For the last year of record, 1928, there is shown:

Total ties used in replacements	77,390,941
Total miles operated—all tracks	403,516
Renewals per operated mile	192

In addition, there was laid in additional tracks, new lines and betterments during 1928 a total of 7,210,117 ties, a figure which, despite the cessation of construction of additional road mileage in recent years, is quite constantly maintained by internal development and the strengthening of existing tracks.

The portent of these figures is that in 1917 the replacements averaged 214 ties per mile operated. In 1928, when the use of treated ties had become quite general and large decreases in renewals could reasonably have been expected, replacements averaged 192 per mile operated,—a decrease of 10 per cent.

An illustration of the tendency in requirements may be given by reference to the data which have been prepared by the road with which I am associated. Complete records of renewals in untreated and in treated ties covering the system have been tabulated since 1901. Analyses of these, supplemented by records on sections of experimental tracks, one of which has been in service about 20 years, provides for accurate determination of the average life of untreated and treated ties, respectively. A curve of renewals giving the percentage of renewals in relation to per cent of average life expired, based on the compilation of records by the Forest Products Laboratory and by lesser data supported by our own experiments, enables a forecast to be made of the requirements for many years in advance. The accuracy of the work is attested by the fact that the record permitted forecast of renewals for the year 1915 and each year since. Up to and including 1929 the total renewals forecasted were 34,047,792; the actual renewals were 34,643,568, a variation of less than 2 per cent, a negligible figure as affecting the accuracy of the prediction.

The average renewal for 1917 was 240 per mile. For 1929 the renewal was 152 per mile. The year 1934 should see the minimum requirement, one hundred and twenty-four per mile. Thereafter there will be successive cycles of years of increases and decreases, with a maximum of 170 per mile and a minimum of 124 per mile until an average approximating 145 per mile will be reached and maintained.

It has been my privilege to review statistics of a neighboring line which were stated with equal accuracy and completeness. During the first five years after this road began the use of treated ties, 1911 to 1915, inclusive, and before benefits from their service were derived, the average renewal per mile was 220. During the last ten years the renewals have averaged but 90 per mile, and last year, 1929, they were 54 per mile. The thorough treatment and the rapid displacement of untreated with treated ties will hold their renewals for the next five years to an average of around 50 per mile. The inevitable cycles of increases and decreases will then ensue. They will carry them successively above and below the figure of 100 per mile, which will be about their average renewal, based on their average life expectancy of 30 years.

If the crosstie market is to be subjected to the cross-currents of increases and decreases with probabilities of general recession as above cited, what constructive measures may producers adopt? The answer is to extend the use of treated timber for any and all purposes for which it is suited. Probably there are no tie producers who could not extend their operations to include dimension timbers and yard lumber of various sizes and kinds of wood to meet divers purposes in the construction and maintenance fields. The American Railway Engineering Association alone has listed 26 main groups of structures with 268 separate items of timber members, practically all of which, except 13 items of materials of temporary construction such as false work and concrete forms, are susceptible of preservative treatment by either creosote or salt solutions. Sixty per cent of them could, with major profit, be subjected to straight creosote treatment. These cover such items as stringers, ties, caps, posts, sills, piles and decking in trestles, docks and coaling stations, etc., largely susceptible to creosote treatment; also similar items in stations, platforms, enginehouses, machine items as sleepers, sub-floors, truss timbers, rafters, sheathing, shops, warehouses and other buildings, supplemented by such etc., some of which will preferably be treated with salt solutions which admit of painting and permit use in locations where the presence of creosote or its odor may be objectionable.

How the New Haven Developed A Local Crosstie Supply

One of the outstanding developments in crosstie circles in recent years has been the marked stimulation of production in areas that have long been regarded as cut out. This is due in part to the opening up of areas heretofore regarded as inaccessible, by the construction of hard roads, and also to concerted attempts by the railways to encourage the development of these latent resources. One road which has achieved marked success in this direction is the New York, New Haven & Hartford. The manner in which this has been brought about was set forth by F. C. Sheehan, office assistant to the purchasing agent of this road, in a paper which is published in abstract below:

New England is not essentially a tie-producing country; some added effort is required of the New England railroad which would secure its ties at home, and even then a favorable combination of circumstances must exist. The average stand of our timber is small; our operators cut lot after lot where the production does not exceed one thousand ties. On the New Haven, we buy from about 75 tie men to secure our 10 to 12 hundred thousand ties per year. We have only three or four operators organized to get out 100,000 ties per year and this is pretty close to the limit that one man can handle under conditions as they exist today.

However, the territory is potentially self-supporting in that there is enough timber standing in New England to cover our tie requirements; I do not by any means imply, however, that each railroad in New England can secure all of its ties along its own lines. There are definite factors limiting this possibility. Labor and production costs are so high that the New England tie man cannot pay freight on his product and compete successfully with ties from outside. Thus he cannot sell one grade here and another there; the nature of his timber is such that his cut runs almost entirely to ties, so that his entire output must go to the line on which it is produced. So production in volume is possible only in so far as the timber along a given rail line will produce ties in the same proportion of the various grades that that particular railroad requires for its own uses. By the same token, railroads using proportions of the various grades out of line with their own local production simply have to go outside for some part of their tie requirements. For instance in a territory where the timber produces 50 per cent grades 4 and 5 ties and the local railroad uses 60 per cent of these grades, the possibilities of local production are limited to the point at which the railroad will have absorbed all of the smaller ties it can use. If you follow this line of reasoning, you will see too, that the road whose requirements are not sufficient to warrant a treating plant on its lines is not likely to be a customer for line-of-road ties, for the same element of high production costs enters here again to operate against the New England tie man.

Aside from the cedar tie production in North Eastern New England, line-of-road production in the territory has centered largely in the New Haven road. The vast majority of the treatment ties have come out on our lines. During the last five years the New Haven has brought out 90 per cent of the approximately 1,500,000 treatment ties that have been produced each year in New England.

We have been very fortunate in that the timber adjacent to New Haven lines produces ties in about the right proportion of grades for our needs. Thus one of the tie man's most serious problems—that of marketing—is automatically solved. There remains the problem of producing within the cost range we can afford to pay. The growth of the hardwood tie business in our territory is pretty fair evidence that the New England tie man has been successful in meeting this requisite, the production of hardwood ties along New Haven lines having grown from 230,000 in 1920 to between 1,000,000 and 1,400,000 from 1923 on, just about covering our requirements.

We found early that the success of our attempt to buy our ties locally was going to hinge entirely upon the degree to which the tie operators and we as a railroad could or would co-operate. The story of how this hardwood tie industry has grown is a striking illustration of what can be accomplished

when two groups of men get together and co-operate toward a common end.

At the outset there was no accurate knowledge as to the amount of tie timber available within our range. Yet both the tie man and the railroad needed reliable information on this important question. To that end the late Mr. Rice invited the leading operators to a conference and subsequently detailed our chief inspector, Mr. McDonough, who is also a graduate forester, to make a comprehensive survey of Southern New England timber. Mr. McDonough spent an entire winter on this assignment, cruising timber, and going over land and tax records throughout our territory. At every point he met with the wholehearted co-operation of the tie men. Transportation, access to local sources of information—leads and help of every kind were provided by these men who are today furnishing the bulk of the New Haven tie requirements.

As a result of this survey, which indicated that there were 12 to 15 million hardwood ties available to our lines, we entered the market on a wholesale scale. Frankly, when we opened up in this hardwood tie field, neither we nor our tie men knew any too much about the business; we simply went along with the methods we had followed for years in buying our chestnut ties. We soon learned that the mechanics of our tie manufacture, inspection and delivery must be entirely revamped if this new industry was to live.

You cannot let hardwood logs lie indefinitely after cutting before you manufacture your ties, neither can you pile hardwood ties in solid unventilated piles and expect a new dollar for an old one out of your business. Yet these were common practices in the manufacture of chestnut ties in our territory and since no harm seemed to arise from these methods, or lack of methods, no pressure was exerted in the interest of more efficient handling. It is no strain on our New Haven memories to recall the day when every one of our tie receiving yards was plugged from one end of the year to the other. Ties were piled in solid windrows; inspections were made under pressure to provide room for more ties; loading was done by work train, usually under like pressure. Yards were never cleaned out and the poor tie man who had made the first few deliveries in the yard invariably found his ties the last to be inspected. It is human nature that these conditions reacted upon the manufacture and quality of our ties. There was no incentive for a man to turn out a first class tie, when in all probability it would lie around six to eight months in a railroad yard before inspection.

Today there is a different story. We don't think that ties are made better or handled more efficiently anywhere in the country than in our territory. Our ties are made from logs felled during the so-called winter season; they are hauled to the mill and manufactured without delay. As they come off the mill they are peeled, any necessary trimming is accomplished in the pit, and the ties are drawn out and piled, separated by one-inch strips, at once. Practically all of our inspections are made at the mills and the ties are trucked immediately direct from mills to cars. Thus our ties are landed in the plant yard absolutely fresh and entirely uniform in condition of seasoning. The plant inspector can then easily reconstruct the history of each lot of ties and so plan his seasoning and treating program intelligently.

We are proud of what we have accomplished in drawing out these millions of ties from apparently exhausted territory, but we are much more proud of the close co-operation between dealer and buyer that has featured our association with our New England tie men during these years. Every step along the road that marks the vast difference between the operating methods and the inferior product of those early days, and the factory type efficiency and the first class tie we get at home today has been marked by complete understanding between the parties and a mutual desire to help each other.

We used to call it a fair day when an inspector got 1,000 or 1,200 ties. Today it is not unusual for one of our men to pick up 3,000 to 4,500. The New Haven inspector is instructed to examine each tie offered him with a view to its suitability for its intended use—not with an eye for defects upon which he might degrade it but which would have no bearing upon its fitness for use in its intended grade. These inspectors, in their visits to various mills, have often been able to point out possible economies, and the dealers in turn have been glad to pass along to other operators suggestions which have proved practical to them. So far as possible, we spread our buying out evenly over the entire year. And so we have worked along upon a plane of mutual understanding, all aiming for the betterment of the industry as a whole.

That this hardwood tie business is of tremendous value to the community we serve will not be denied. Our road has disbursed upwards of $1,250,000 annually among New England tie men. This money has provided a livelihood for a vast number of woodsmen, sawmill operators, truckmen and others engaged in the production of New Haven ties. Over 75 lumbermen in our territory will tell you frankly that they could not exist as such without our tie business as the backbone of their operations.

We have used an average of 1,500,000 ties the last five years, and we look for a drop in renewals in the years just ahead. We are buying 1,200,000 ties this year and expect to be down to 1,000,000 by 1934. We have bought practically all of our ties locally, having gone outside only occasionally and then to pick up quick-drying ties to protect our treating plant. As a matter of fact, the New Haven has bought 90 per cent native ties annually during the period.

The future is more indefinite. We can probably get the bulk of our ties along our line for the next five years, following which it will be necessary more and more to piece out with imported ties. There is always the possibility that it may seem advisable to conserve local timber by picking up outside ties each year, but I think this question is more likely to be decided each season on its own merits and not on a definite long-term policy. Let us for the purpose of this discussion say that the New Haven will import 150,000 to 200,000 ties yearly for the next five years and that for the following five-year period it will buy 400,000 to 500,000 ties outside.

The Railroads' Interest in Tie Production

The fact that the railways spend more for ties than for any other material, with the single exception of fuel, demonstrates the interest that railway executive officers take in this material. It also affords a reason for the widespread compilation of statistics regarding tie life in recent years, as a step in the development of means to extend this life and decrease the requirements. C. E. Johnston, president of the Kansas City Southern, reflected the interest of executive officers in this subject in an address at the annual dinner, of which the following is an abstract:

It so happens that the Kansas City Southern is one of the few roads in the country whose tie records are sufficient to allow reliable analysis. In 1908 we started using dating nails and required reports from our foremen of ties removed from track. This report shows the kind of tie, the year installed, the mile on which it was laid, and the date of removal. Studies made from these data seem consistent and reliable.

The first serious attempt to analyze our tie records was undertaken at the end of Federal control, as a basis of settlement for the period of federal operation. Until then, not even the officers of the road realized that such excellent data were available. From the analysis of our records, presented to the United States railroad administration, we were allowed more than $300,000 for under-maintenance in the tie account alone for the 26 months of Federal operation. Without these records, it is doubtful that we could have substantiated the claim of one-half that amount.

The Life of Ties

Our records are in such detail that we can ascertain the average life of our ties, not only for the system but also by roadmasters' territories. Our average system life of white oak ties in 1920 was 7.95 years. The longest life was obtained on the north end of the line of our line between Pittsburg, Kan., and Kansas City, Mo.,—9.4 years, and the shortest life was between De Quincy, La., and Port Arthur, Tex.,—6.6 years.

We have as yet been unable to reach any definite conclusion as to the probable life of our treated oak ties. They were first applied in 1909. Since that time, with the exception of the period of Federal control, when the number required was unobtainable, the percentage of treated oak ties increased until 1925, since which year all replacements have been made with this class of tie. It is estimated that 75 per cent of all ties placed in Kansas City Southern tracks are now of treated hardwood.

We began by confining the use of treated ties to the southern portion of our line, where we had hopes of getting a 10-yr. average life, the approximate equivalent of the life of an untreated white oak tie in track on the northerly portion of the line.

We have been, and are still being, continuously surprised by

the expected life. First, we raised it to 12 years, then to 15 and we now hope for an average of 25 years and even 30 years is not out of reason.

Neglecting small charges, the cost of an untreated tie in the track of any midwestern road, including labor, will approximate $1.28. If an average life of eight years can be expected, the annual cost of this tie, for all intents and purposes, is 16 cents per year. The initial cost of a treated tie in place is approximately 35 per cent more or $1.73. If an 11-year life is attained, it is a little better than an even break, while if an average life of 20 years is obtained, the annual cost of a treated tie is 8.65 cents. Comparing this with 16 cents for the untreated tie, the saving per year per tie is 7.35 cents. However, the present indication is that we will get at least 25 years' average life from our treated hardwood ties, in which event the annual charge will be slightly less than 7 cents, and the saving, as compared with the untreated white oak ties, will be 9 cents per year per tie. This will go far toward paying the interest charges of any railroad.

Decay Not Whole Problem

Protection from decay is not, however, the whole problem in obtaining the full life of the tie. There are other and just as important causes of destruction. We have to contend with splitting, breaking, crushing, rail cutting and other forms of mechanical wear. If we are compelled to remove treated ties from the track at the end of 8 years because of any of the foregoing reasons, there is an absolute waste of the cost of treatment. Under increasing wheel loads and speed, these difficulties are becoming greater and greater, but what we must keep in mind and work to as an end is to increase the weight of rail, use larger and properly designed tie plates, apply anti-splitting devices, and properly apply and tamp the ballast.

Besides these appliances, we are finding that the tie itself can be given a better chance by pre-adzing, which can be done more cheaply and effectively by machinery than was ever possible by the old field method. The same is true of the boring of ties for spikes. We not only get more holding power from the spike, but give the tie plate an unimpaired, unbroken fiber for its bearing. Pre-adzing and boring are perhaps the most important forward steps since the introduction of creosote.

While the railways are coping with these problems, which primarily concern use rather than production, the tie producer, with his more expert knowledge of timber, can be of inestimable assistance as consultant and advisor. Painstaking woodcraft and forest methods will contribute a better tie than when slipshod methods are tolerated. The proper season for cutting should be scrupulously observed, as well as proper handling and storage methods both before and after delivery to the tie yard. Close supervision alone can make the workmen in the woods live up to good standards.

It is easy to see that the increased average life of ties, brought about through treatment and improved appliances is going to result in a proportionate decrease in the number required for replacements. Before the influence of treated ties began to be felt, 400 ties per mile per year were our normal replacement. On the conservative estimate of 20 years average life for creosoted ties, this requirement will be reduced to 160 when treated ties entirely replace the remaining untreated ties. This will effect a saving of 240 ties per mile per year, or a reduction in the area to be cut to supply 1,000 miles of road, of about 4,300 acres, or 6½ square miles. If the entire mileage of the United States could be brought to this same standard, the saving in acreage cut annually would approximate that of the state of Delaware.

Substitute Ties Experimental

Substitute ties of various materials are constantly being proposed and tested, but as yet, no substitute has been found that has all the advantages of wood. I think I am safe in predicting that the wooden tie will remain standard for a long time to come, and perhaps indefinitely if our problems of forest supply are met and solved. This latter is a factor over which we railroad men have no control, but in which you have great interest and over which you can exert great influence.

On a basis of 9 years' average life of all ties of this country at the present time, a forest area equivalent to the state of Connecticut has to be cut each year in order to supply the current demand.

It was not until an energetic, industrious, progressive people had created a highly developed civilization that the drain on the timber supply became apparent, and it was then years before those actually conversant with the condition were able to arouse the interest of those in power. During this time, and even since, some of the finest virgin forests of the country have been slaughtered.

These conditions must be taken in hand and corrected. You men and your organization should be the leaders in this movement. Cutting must be done scientifically to the end that a perpetual source of timber supply will be available at reasonable cost. This can be done and is being done by forward looking companies. I know of at least one company, which has large holdings in Arkansas and Oklahoma, which has set a definite thickness of trunk, below which it will not cut and by this method it has determined with some accuracy that its forests will produce a perpetual supply of timber. The timber producers must accept some plan that is workable and abide by it.

Freight Car Loading

WASHINGTON, D. C.

REVENUE freight car loading in the week ended April 26, amounted to 907,174 cars, or slightly less than the loading in the first week of the month, a reduction of 144,711 cars as compared with the corresponding week of last year and of 55,833 cars as compared with 1928. All classes of commodities except grain and grain products shared in the reduction as compared with last year, while miscellaneous loading showed a decrease of 46,712 cars. There was also a decrease of 25,050 cars in coal loading and of 38,755 cars in ore loading, which got an earlier start last year. All districts showed decreases as compared with both years except the Southwestern, which showed an increase as compared with 1928. The summary, as compiled by the Car Service Division of the American Railway Association, follows:

Revenue Freight Car Loading

Week Ended Saturday, April 26, 1930

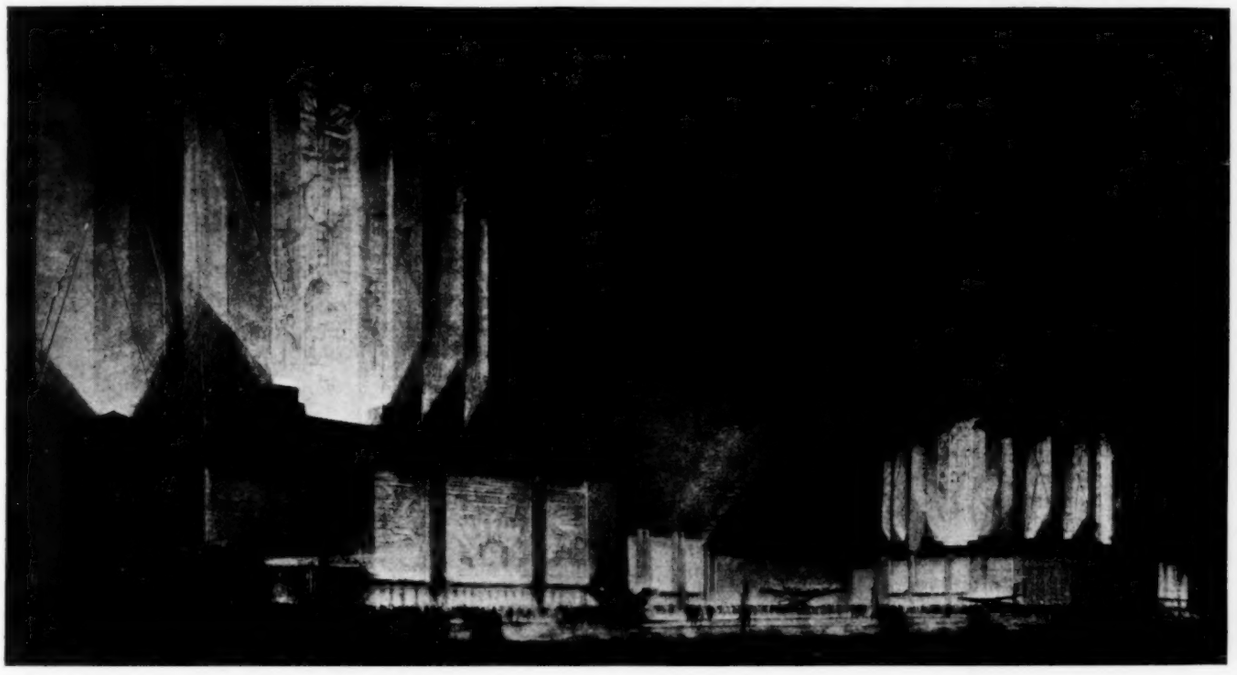
Districts	1930	1929	1928
Eastern	212,148	254,156	231,878
Allegheny	184,927	217,745	197,473
Pocahontas	51,521	55,342	52,597
Southern	136,812	151,976	142,993
Northwestern	111,400	151,209	123,370
Central Western	133,140	140,707	138,247
Southwestern	77,226	80,750	76,449
Total Western Districts	321,766	372,666	338,066
Total All Roads	907,174	1,051,885	963,007
Commodities			
Grain and Grain Products	38,768	36,878	43,256
Live Stock	27,383	31,064	29,899
Coal	139,611	164,661	156,666
Coke	9,929	12,705	10,505
Forest Products	58,669	71,592	63,890
Ore	15,371	54,126	14,058
Merchandise L.C.L.	247,354	264,058	259,392
Miscellaneous	370,089	416,801	385,341
April 26th	907,174	1,051,885	963,007
April 19th	892,881	1,005,880	945,289
April 12th	911,310	973,152	912,659
April 5th	907,928	958,225	919,352
March 29th	885,159	969,196	948,743
Cumulative totals, 17 weeks	14,889,304	16,142,670	15,532,503

The freight car surplus for the period ended April 23 averaged 439,371 cars, a decrease of 6,760 cars as compared with the preceding period. The total included 200,503 box cars, 183,030 coal cars, 28,798 stock cars and 14,743 refrigerator cars.

Car Loading in Canada

Revenue car loadings at stations in Canada for the week ended April 26 totaled 56,661 cars, a decrease from the previous week of 4,652 cars and a decrease from the same week last year of 11,298 cars.

	Total Cars Loaded	Total Cars Rec'd from Connections
Total for Canada		
April 26, 1930	56,661	34,052
April 19, 1930	52,009	35,501
April 12, 1930	57,080	36,868
April 27, 1929	67,959	44,686
Cumulative Totals for Canada		
April 26, 1930	962,598	623,899
April 27, 1929	1,066,699	738,677
April 28, 1928	1,058,599	677,338



Proposed Transportation Building for Chicago World's Fair

Prepare Great Railway Exhibit for Chicago Fair

All forms of transport to be portrayed—Historical pageant will be shown twice daily—Large building planned

PLANS are well advanced for the transportation display at the Chicago World's Fair in 1933. The exhibition will be called the Travel and Transport Show. Two methods of presenting the picture appear—exhibit halls and grounds after the general manner of other outstanding world's fairs, although radically different in treatment and arrangement; and a moving pageant of transport; vehicles of the land and water and air, proceeding slowly under their own power past the reviewing stands and the grand stands.

The reviewing stands and the grand stands are to be built to face Lake Michigan in such a way that its surface, carefully protected by bulkheads, can be used for water-borne craft of every variety; early coasting vessels and canal boats, old-time American river boats, lake steamers and ocean vessels, old and new, either full-sized or in miniature, will sweep past the stands. It is possible that some of these last craft may be reproduced in miniature working models, from eighty to one hundred feet in length, each proceeding under its own power in the waters of the lagoon and, at a slight distance, presenting an astonishing resemblance to an actual ocean liner of today.

In the space between the fronts of the stands and the rim of the lake will be put down standard railroad tracks and a highway. Upon the paved surface of the latter will move first the creaky, lumbering wagons of a century ago, then stage coaches, post-chaises, conestoga and other forms of freighting wagons, "prairie schooners" and the like. In a later development of the pageant, this same broad road becomes the pathway of representative types of automotive vehicles, showing the development of the "horseless carriage" from the days of Selden and Haynes and Ford, down to 1933.

Pageant Twice Daily

Similar use is to be made in the pageant of the railroad tracks. Small locomotives of 1833—some of them with upright boilers and curious walking-beam effects . . . . . balloon stacked "wood-burners" of the 'forties, the 'fifties and the 'sixties . . . . . big and handsome freight and passenger pullers of today . . . . . these and their trains, old and new . . . . . an electric locomotive or two . . . . . an oil-electric . . . . . curious looking locomotives . . . . . and their trains from overseas (the foreign railways already are showing a tremendous interest in the Fair, and are planning a large participation in it) . . . . . all these, and more, ... and gorgeous, great floats peopled with gaily costumed folk . . . . . the very apotheosis of pageantry . . . . . will also run (by unseen power) upon

these solid steel rails. So much for water and for land. And toward the end of this pageant, dirigibles and the heavier-than-air planes, seaplanes and amphibians.

Twice a day during the duration of the Fair—each afternoon and each evening—this slow-moving, swiftly-enacted pageant will tell to the thousands, on the comfortable stands, the story of A Century of Transport Progress. To the mute actors—buses, wagons, boats, cars and engines, dirigibles and airplanes—will be added several hundred humans, the swing and rhythm of a musical score carefully rendered by a symphony orchestra. Due to its great size, the pageant will move but twice a day. But at all the open hours of the Exposition the exhibits of the Show will be freely available to public inspection.

A great part of these will be shown in the extensive Transportation Building. This structure, one of the very largest in the 1933 Fair, three stories in height, and reaching in its main bulk some 1,070 feet, already is soon to be started. The spring of 1931 should see it well on its way toward completion.

Large Transportation Building Planned

From the outside, the overwhelming features of this great new structure by the side of Lake Michigan are to be its twin domes, each rising more than 125 feet into the air. Fabricated in gleaming metal, a maze of towers and minarets and gently swaying chains, each of these two domes is to have the distinction not only of being the largest ever designed and built (in clear, inside diameter, 188 feet, as against the 87 feet of the dome of the Capitol at Washington) but each bids fair to be ranked as one of the most beautiful features of this entire architectural achievement.

One of these domes is to be dedicated to the railroad; the other to the airship. (The steamship—water borne—is to be reproduced, upon a large scale, elsewhere in the building.)

In the locomotive dome, there is more than a slight semblance of a railroad roundhouse. In the center, the lofty-ceilinged circular room is to hold an elevated turntable. Upon this, turning slowly all the while, and under the glow of constantly changing lights, is to be mounted one of the finest of modern passenger locomotives. This engine will, itself, be in constant action. Its drivers, mounted upon unseen friction wheels, will turn so that the entire exterior working mechanisms of the locomotive (only operated by compressed air instead of steam) can be observed in actual operation.

Upon the radial tracks leading out from this dominant central feature will be shown a group of the historic locomotives of America and Europe, which are not operated in the daily pageant. (The railroad equipment shown in the pageant will be placed at other times upon side tracks so as to be readily available for minute inspection by the general public.) . . . . . While in a great frieze, surmounting these actual early engines and running entirely around the inside of the dome, will be shown graphically the railroad locomotive development of the world. It is expected that these last engines may be executed in bas-relief and color and motion brought to aid in giving great realism to them.

This, however, is but the beginning of the railroad exhibit. It extends in many directions out from the locomotive dome. Upon standing tracks—indoors and out—will be other locomotives and other cars, both American and foreign, and all open to minute inspection. There are to be electric locomotives, electric trains. These in full size, in most cases the actual vehicles . . . . . In addition to all of which will be many miniature models, most of them in actual operation. For instance, a typical American railroad yard, showing the complicated and fascinating process of making-up and breaking-up of long freight trains. Waterside terminals . . . . . The development of the air-brake . . . . . The development of signaling and of train control . . . . . and other important railroad devices . . . . . The development of the railway, and of the express . . . . . And last, but not least, the development of human relationships upon the railroad, the constant bettering of understanding between employer and employee.

In similar fashion, aviation and other forms of transportation will be displayed.

Couzens Resolution To Be Reported

WASHINGTON, D. C.

THE Senate committee on interstate commerce on May 2 voted to report out the modified Couzens resolution to suspend the Interstate Commerce Commission's authority to approve railway unifications but without being able to decide at that time whether the report should be favorable or unfavorable. The vote on that date in the committee was 6 to 6 and Chairman Couzens was authorized to poll informally six absent members, not including the nineteenth member of the committee, Senator Smith of South Carolina, who had been ill and had not attended the hearings. On May 5 Senator Couzens forecast a vote of 9 to 8 in favor of the resolution but it was reported that one Senator had changed his vote on examining the amended resolution more carefully, and on May 7 there was still one Senator to be polled.

The vote of the committee would in any event afford an opportunity for the resolution to be brought before the Senate and a favorable report would theoretically give it more chance than an unfavorable one, but near the approach of adjournment other considerations would govern whether it could be brought to a vote at all. The Senate steering committee has placed the resolution on the program for consideration at this session, in place of the bus bill.

Further changes in the terms of the resolution were made after consultation with Commissioners Eastman and Porter of the Interstate Commerce Commission. The authority of the commission to approve of consolidations or acquisitions of control would be suspended until March 4, 1931, except in so far as it may be exercised in conformity with three stated requirements. One of these directs the commission to prescribe conditions to protect the interests of the employees; another directs it to require the applicant to make a binding offer to acquire other roads assigned to the same system, and the third provides that the commission shall not authorize a consolidation or acquisition which would otherwise be in violation of the anti-trust laws. The resolution would also declare unlawful "any consolidation or unification or exercise of common control" of carriers by railroads in interstate commerce, however accomplished, which the commission is not empowered to approve and authorize, or which the commission, if empowered, has not approved or authorized. An earlier proposal to prohibit exercise of "partial control" has been omitted, as has the proposal to impose personal penalties.

Fuel Performance Best Index of Operating Efficiency

This point emphasized by J. S. Pyeatt in Fuel Association talk—Other notable addresses presented

THE twenty-second International Railway Fuel Association convention was held at the Hotel Sherman, Chicago, May 6 to 9, inclusive, with President W. J. Tapp, fuel supervisor of the Denver & Rio Grande Western, in the chair. In the opening address, J. S. Pyeatt, president of the D. & R. G. W., commented on the effective work of the Association, and said that fuel performance is the best index of operating efficiency because practically every operating improvement is reflected in this index. One important point particularly stressed in the address by Samuel O. Dunn, editor, *Railway Age,* was that between 1920 and 1928, while the fuel bill was being reduced 47½ per cent, the railway tax bill was increased 43 per cent. Mr. Dunn called attention to the revolution occurring in the transportation industry and the problems which now confront managements as a result of the diversion of traffic from the railways back to the highways and attempts to divert it back to waterways.

Other addresses on the first day were made by C. E. Bockus, president of the National Coal Association, and F. H. Hardin, assistant to the president of the New York Central. Committee reports on the following subjects were presented: Steam Turbine Locomotives; Diesel Locomotives; Front Ends, Grates and Ash Pans; and New Locomotive Economy Devices. Abstracts of the addresses and of these committee reports will appear in this and subsequent issues of the *Railway Age.*

Further Fuel Economies

By J. S. Pyeatt

President, Denver & Rio Grande Western

Fuel consumption is the best index I can find to show the degree of operating efficiency enjoyed by a railroad. And the reason for this is that every operating improvement virtually is reflected in a saving in fuel. If you improve your roadbed, and maintain it in good condition, the results will show in fuel economy. If your locomotives are kept up to a high standard, the saving in coal is accordingly reflected. Likewise, the efficiency of train crews may be translated into dollars saved in fuel conservation.

Such findings are of small comfort to our friends the coal producers who may view with alarm our never ending search for the wasted lumps of coal. But for their especial benefit and comfort, it may be said that the users of power have been saving coal about 200 years, and in spite of their efforts, the consumption of coal has steadily increased. The answer, of course, is the constantly increasing demand for power derived from coal.

The demand upon the railroads for faster schedules, and for greater efficiency in train operations, has increased our requirements for motive power of greater unit capacity. This means greater fuel consumption and unless we exercise marked economy in our use of fuel, we will find ourselves literally burning up all the profits. Our task, then, is to find ways and means of using no more coal than is necessary to create all the power that we need.

And that is why we have a high regard for proceedings of this character. They give us an opportunity to compare notes on what we have accomplished, and furnish us with ideas to test out in practice.

The Influence of Supervision—Operating Conditions

There must be supervision in order to know all the conditions relating to fuel selection, distribution, and final use. Current reports on fuel performance must be studied, and recommendations made for carrying out the fuel conservation program. Supplementing current reports as a basis for developing a plan of operation, we have found that the holding of division meetings frequently is of great value. Many worth while suggestions are received at such meetings.

When ideas evolved from this procedure seem advantageous they are developed by test under varying conditions over the system. If proved satisfactory, a standard practice is established. We have worked out a number of ideas in this manner. As an illustration, we have increased the mileage of our locomotives by longer runs. Our passenger engines at present are running from Denver to Salt Lake City, a distance of 745 miles, without being cut off at intermediate points, thus saving the power that would be lost by a series of shorter runs.

We have found that calibration of tenders has afforded a better basis for charges to each engine than the old method of guessing because when the coal is properly distributed to each engine and class of service a definite check on fuel efficiency is provided.

About 87 percent of the coal purchased by a railroad is used on locomotives, but there is an opportunity for economy in the use of fuel for power, pumping and heating plants. It is surprising what can be accomplished when someone is made responsible for their economical operation. So much for supervision.

Next in importance as a contributing factor to fuel economy, I consider, is favorable operating conditions on the line. The Denver & Rio Grande Western records a decrease of 22.6 per cent in unit fuel consumption in freight and 24.1 per cent in passenger service since 1921, comparing favorably with the record for all Class I railroads. I attribute this record to the improvement which we have made in our roadbed, in our curvature and grades, and in better equipment and motive power, as well as the work of our own fuel organization which came into existence in 1918.

In addition to line improvements, better operating methods and more modern power, we have better

handling by trainmen, enginemen and dispatchers, as well as those directly charged with the responsibility of fuel administration. Road foremen make daily activity reports to the division superintendent and master mechanic. Inspectors report daily on cars inspected at the mines as well as at the stations for the purpose of checking terminal conditions. These reports are sent to the office of the fuel supervisor, as a clearing house on data having a direct bearing on fuel saving.

Further Improvement in Firing Practice Needed

Out of this welter of experience we should find some point of departure for renewed effort in fuel economy. We have made considerable progress. It remains for us now to find a new point of attack. There is one field of investigation which occurs to me at this time to be worthy of attention. It seems to me that one of the most important fuel problems at present relates to firing practice. Stoker locomotives are increasing in number. The larger engines, of course, could not be operated without the stoker. But there is still room for economy even with the stoker. A great amount of coal can be wasted by improper handling and firing of a stoker locomotive. Even with pneumatic firedoors which help to conserve coal on hand-fired locomotives, we still leave much to individual judgment. When there is no proved practice other than individual experience to govern the firing procedure, the human equation is allowed to play altogether too large a part in an age depending upon scientific precision.

I commend this subject to your earnest consideration at this meeting. Most of this membership is made up of practical railroad men, who have come from engine service of some kind or other. While I do not lay great store by the usual tests of the laboratory in this kind of work, where so many of the variable factors cannot be considered, I think we all can learn something from these tests when they are conducted with fidelity to accuracy and standard practices.

I shall read a portion of an article by A. F. Stuebing,* which I think emphasizes how important a factor the rate of firing may become in locomotive performance. In the tests analyzed, the speed and the pull were the variables measured while the type of locomotive and fuel were constant. The locomotive was a Mikado type with rated tractive force of 61,460 lb. A high grade bituminous coal having a heating capacity of 14,000 B.t.u. per lb. was used. Here is what Mr. Stuebing says:

> A comparison of the drawbar pull at constant speed and varying rates of firing brings out interesting features. For instance, at 20 miles an hour, firing 2,000 lb. of coal per hour, the drawbar pull is 11,700 lb. At 3,000 lb. per hour, it is raised to 19,400 lb., an increase of 66 per cent in hauling power obtained with 50 per cent more fuel. From 3,000 lb. to 4,000 lb., 33 per cent increase in fuel produces 35 per cent more drawbar pull. From 5,000 to 6,000 lb., the ratios are 20 per cent and 13.8 per cent. From 8,000 lb. to 10,000 lb., 25 per cent more fuel gives only 5.5 per cent greater hauling capacity. This shows that the maximum efficiency of fuel utilization at this speed is at about 4,000 lb. per hour, and brings out the wastefulness of extremely high rates of firing.

Then considering the rate of speed, he says:

> The fuel rate of 4,000 lb. per hour gives the lowest consumption per ton-mile from 17 to 30 m.p.h. at which speed the unit consumption at 5,000 lb. per hour is almost the same as for 4,000 lb. As the rate of firing is increased still further the fuel per ton-mile increases throughout the entire range of speed, the difference between 8,000 and 10,000 lb. per hour being particularly large.
>
> For 4,000 tons haul the consumption is lowest at 30 miles per hour and down to 24 miles per hour. From 24 to 20 m.p.h. the 5,000 ton train gives lower fuel consumption, and so on.
>
> It should be noted that for every speed there is a definite tonnage at which the unit fuel consumption for that speed reaches its minimum value.

It seems to me that a study like this presents an interesting field for thought and I am hopeful that in time we will be able to put even the firing of a locomotive on a scientific basis of efficiency.

In order to make a definite scientific check of fuel consumption on the Denver & Rio Grande Western, and the results obtained from the power we were using, our engineers last summer conducted a series of dynamometer tests, which were helpful in that we were able thereby to reconcile both theory and practice. We obtained from these tests among other things a definite record of locomotive performance showing comparative rates of fuel and water consumption and the economic performance of engines by individual classes. In making these tests our men were enabled to gain reinforcement in the knowledge of the conditions they are facing every day. With such a basis, there is no telling what may be developed in efficient train operation, which means among other savings, further economy in the use of fuel.

Every railroad has its own individual fuel problems. The only way they can be solved is by extracting from well known practices that which can be applied most effectively under the peculiar conditions of operation which each road faces. The railroads have been given the best that science can offer in locomotive design. They have practiced supervision and control, have developed the most favorable operating conditions, and now return to this association for guidance in undertaking the next stage of the journey.

* Locomotive Performance and Operating Costs, By A. F. Stuebing, *Railway Age*, April 27, 1929, page 954.

Tax Increase Offsets Savings in Fuel

By Samuel O. Dunn
Editor, *Railway Age*

We are now in the midst of the greatest revolution in transportation that has occurred since the beginning of steam railroad transportation in this country almost exactly one hundred years ago, and it may be almost as difficult to anticipate the full effects of the present revolution as it was to anticipate the full effects of that which began a century ago.

It is a curious fact that the revolution which began a century ago involved the substitution of railways for highways and waterways as our principal means of transport, while the most outstanding feature of the revolution through which we are now passing is the diversion of traffic from the railways back to the highways and attempts to divert it back to waterways.

Since 1920 hundreds of thousands of miles of paved highways have been built; the number of private automobiles, motor coaches, and motor trucks has increased by millions; and one-third of the passenger business of the railways has been taken from them, resulting in a loss in passenger earnings running at present at the rate of $450,000,000 annually. Now we are confronted with the question of how much long distance passenger business is going to be taken by the airways. The motor truck has taken not only a large amount of short-haul freight, but a considerable amount moving comparatively long distances. A large amount

of long-haul freight has been diverted to the Panama canal route. Railway freight business has continued to show increases, but its rate of growth is much slower than before the war; and owing to this, and to the large decline of passenger business, total railway earnings are tending to decline. Last year, in spite of a record-breaking freight business, total earnings were less than in either 1926 or 1923. This was the first year in railroad history when total railroad earnings failed to set a new high mark in a year of great business activity. During the business depression in the first quarter of this year, total railway earnings were the smallest since 1922. Formerly the railways derived almost one-fourth of their earnings from passengers. Now, with all the great passenger terminals they have, and all the fast and luxurious trains they are running, they are deriving only about one-seventh of their earnings from passengers.

Revolutionary Changes Bring New Problems

These revolutionary changes have, of course, changed the problems of railway managements and government railway regulating authorities. As a result of the large investment made during the last decade, the need for rapid enlargement of railway capacity is past for the present. At the peak of the traffic last year the railways had more than 100,000 surplus freight cars, and at the bottom of the business depression this year they had almost 500,000 surplus cars. As their capacity has increased and their total earnings have shown a tendency to decline, their need for economies in operation has become more pressing, and very large economies have been effected. The average wage of employees has been increasing ever since 1923 and last year closely approached that of 1920, which was the highest in history. Nevertheless, operating expenses were $1,275,000,000 less than in 1920 and $400,000,000 less than in 1923. These huge economies have been effected by reducing expenses of all kinds, but chiefly by reducing the labor employed. The number of employees last year was 336,000 less than in 1920, 193,000 less than in 1923 and 120,000 less than in 1926. One of the largest savings has been in the fuel bill which was $192,000,000 less than in 1923 and $338,000,000 less than in 1920.

With one exception, the reduction in expenditures for fuel has been relatively the largest reduction of operating expenses that has been made. The reduction in expenditures for material and supplies between 1920 and 1928 was 20 per cent. Wages were reduced after they reached their peak in 1920, but the average wage has been increasing since 1923. On the other hand, there has been a large reduction in the number of employees: and the total amount paid for labor in 1928 was 23 per cent less than in 1920. The reduction in the fuel bill between 1920 and 1928 was 47½ per cent. The only other item of railway expenses that was curtailed relatively more was that for loss and damage of freight, reduced 57 per cent.

The economy of operation is determined by railway managements and employees, and by those engaged in the manufacture of railway equipment and supplies, whose progress in improving all their products has been one of the principal causes of the great advances made in the art of railway transportation. On the other hand, the taxes the railways must pay are determined by government authorities. Formerly the fuel bill of the railways was much larger than their tax bill. One of the most significant developments on the railways during the last decade has been that as a result of the increase in the tax bill and the reduction in the fuel bill the annual tax bill has now become larger than the annual fuel bill. In 1920 the total expenditures of the railways for fuel were $675,000,000, and their taxes were only $272,000,000. In 1928 their expenditures for fuel were only $354,000,000, and their taxes were $389,500,000. While we have not yet complete comparable figures for 1929 we know that last year there was a further increase in taxes and a further reduction of the fuel bill.

Fuel Bill Reduced 47½ Per Cent— Taxes Increase 43 Per Cent

Between 1920 and 1928 while the fuel bill was being reduced 47½ per cent the tax bill was in process of being increased 43 per cent. It seemed a great pity that our governments are not run by men such as those I see here before me, who have contributed so much toward achieving the large reduction in the railway fuel bill. If you were running our governments I am quite sure the American public, including the owners of railways, would not be burdened with such constant and enormous increases of taxes.

Of course, the reduction of the railway fuel bill has not been due entirely to increased efficiency in the use of fuel, because there have been reductions since 1920 in prices of fuel. The amount of fuel consumed by locomotives in 1929 was approximately 40,000,000 tons less than it would have been if the efficiency with which it was used had been the same as it was in 1920. At the average price of fuel prevailing in 1929 this represented a saving of $93,000,000, while at the average price of fuel that prevailed in 1920 it would have meant a saving in excess of $165,000,000.

In spite of all the revolutionary changes that are occurring in transportation, there is one fact of vital importance that will not be challenged by any intelligent person. This is that our railroads are now and for many years will continue to be our principal means of transportation, and that other means will be auxiliary to them. That being the case, the national prosperity is dependent upon the railways being kept in condition not only to handle all the traffic offered to them, but to handle it efficiently and economically. If this is to be accomplished, and the present tendency of railway total earnings to decline is to continue, it is evident that further gigantic economies must be effected; and they can not be made without the investment of capital in ways that will reduce the amount of labor employed and the quantities of fuel and materials used.

The Decline in Railway Total Earnings

But must we look forward to a continuing decline of railway total earnings? Can we reasonably expect that in an industry of declining earnings there can constantly be effected economies sufficient to keep it in sound financial and physical condition? Is the constant decline of employment in the railroad industry desirable?

The developments that are occurring are not due entirely to natural economic forces. They are largely due to governmental activities affecting all means of transportation. Our governments are not only directly regulating the railways, but are indirectly regulating them by large expenditures upon highways and waterways, which help other means of transportation to take traffic, not because their service is rendered at less cost, but because part of the cost is borne by the taxpayers.

Numerous railways are now beginning to try to protect their earnings by engaging in the operation of motor coaches and trucks upon the highways. There is opposition to this in some quarters upon the ground that it will reduce competition. It is proposed to develop an extensive system of inland waterways at public expense. Many railways doubtless would wish to operate boats upon them as auxiliaries to their rail service, but this would be contrary to existing law. We hear much said about the desirability of co-ordinating all means of transportation, and that transportation facilities being provided largely at public expense are not intended to injure the railways, but supplement them. Obviously if a large part of the cost of providing these other means of transportation is to be borne by the public and the railways are to be prevented from using them, the result will be to continue to divert traffic from the railways through subsidized competition with them. Do those who favor this policy actually want to break down the railways, or are they simply blind to the fact that no industry can permanently bear the effects of government subsidizing of business in its field unless it is allowed to share in the benefits of the subsidies?

Address by C. E. Bockus

In addressing the convention, C. E. Bockus, president of the National Coal Association, outlined some of the problems of the coal industry, occasioned by the increase in cost of practically every factor which enters into the production and distribution of coal, and a market which has for some time been distinctly a buyers' market. He mentioned the growth in production of coal in this country and said that either Pennsylvania or West Virginia produces more coal than was mined in the entire United States annually prior to 1897. These states in combination produce more coal than Great Britain and practically as much as Germany. Mr. Bockus called attention to the reduction in the number of producing mines during the past 10 years; from three to four thousand mines, mostly small and inefficient, have ceased to function. He said that while this looks like industrial waste, in the same period there were 5,000 bank failures, involving one and one-half billion dollars in deposits. Mr. Bockus closed his remarks with a tribute to the improvement in railway methods of purchasing fuel, mentioning the recent action of Eastern carriers in adopting the following policy:

"That in the purchase of all railway fuel coal, direct contractual relations be had between the railroads and producers or recognized coal sales agents who will furnish their authority for their quotations and place their orders direct with the producers.

"That the spread between the maximum and minimum requirements in railroad coal districts be reduced to a minimum."

Mr. Bockus explained that the first clause stops pyramiding of commissions on sales and assures to the producers the price paid by the consuming road. The second clause helps the producer in better adjusting his contracts so that there will be less variation between monthly and seasonal output.

Address by F. H. Hardin

F. H. Hardin, assistant to the president of the New York Central, said that one of the evils of establishing startling records such as those achieved in fuel performance is the tendency to pat one's self on the back and accept that performance as satisfactory. He maintained that this is an economic age, featured by the survival of the fittest, and over 100 years' experience with the steam locomotive has shown that by and large, for all types of service, it has no equal. Mr. Hardin said that he could conceive of nothing more ideal than the ability to attach a locomotive to a train at the Grand Central terminal in New York and run it to Chicago without having to worry about water, fuel, cinders, smoke, etc., and he hoped, therefore, that the Diesel locomotive builders will some day solve the three problems confronting them namely, how to reduce the relatively large unit weight and cost of this type of power and make it develop more sustained horsepower at high speeds. In addition to the high first cost, there is still a question mark on maintenance, Mr. Hardin said.

He mentioned the recent purchase of 35 Diesel-electric switching locomotives by the New York Central for operation on the west side of New York City; also two of these power units for operation in the La Salle Street station, Chicago, and four for Michigan Central service in the Illinois Central station, Chicago. The Chicago locomotives were purchased with a view to eliminating smoke and noise. The locomotives used in New York City, however, were purchased because of their ability to handle a high peak load as, for example, in hauling cars up the relatively steep grade from car floats. Mr. Hardin said that these 600-hp. locomotives will deliver for short periods overloads up to 1,100 hp.

Interesting moving pictures showing the operation of these switching locomotives in New York City, also steam locomotives on the New York Central Lines, were included with Mr. Hardin's address. In closing his address, Mr. Hardin paid a tribute to the steam-turbine locomotive designers in Europe who have developed excellent engineering designs. On account of the relatively favorable fuel price, however, these designs have not, up to the present time, received much attention in this country.

Diesel Locomotives

The committee on Diesel locomotives presented a report covering a review of progress, data on operating performance and maintenance, and trends in design in the Diesel locomotive field. The report included a list of 98 Diesel locomotives in service and under construction for railroads and industrial concerns in the United States and Canada. Of this number 24 are for industrial concerns and 74 for railroads. Included in this list are 31 300-hp., 16 600-hp., 1 750-hp., 1 800-hp., 1 900-hp., 2 1000-hp., 1 2260-hp. and 45 oil-electric battery locomotives. Following is an abstract of the report.

The Baldwin 0-4-4-0 Locomotive

In May, 1929, Baldwin built an 0-4-4-0 type Diesel-electric locomotive, No. 61000, in which has been installed a 1,000-hp. Krupp Diesel engine. The engine has oil-cooled pistons and heads. Jacket water and piston cooling oil are cooled in radiators by means of electrically driven fans. The engine is started by high-pressure air furnished by a compressor attached to the oil engine. Air for Westinghouse special No. 14 EL modified brake equipment is also supplied by this compressor.

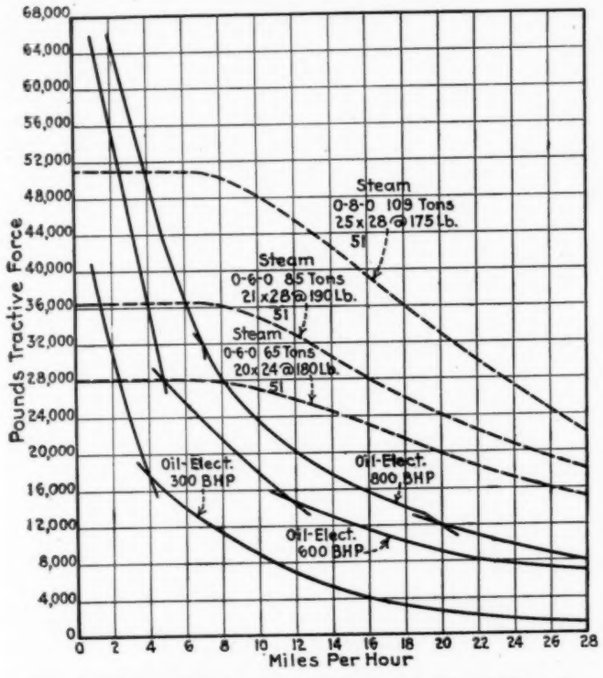
This locomotive was tested in heavy yard service

on an eastern railroad, its performance being compared with that of a consolidation steam locomotive weighing 251,000 lb. and having a tractive force of 49,000 lb. The hourly fuel and lubricant consumption of the Diesel locomotive was 9.4 gal. of fuel oil and .2 gal. lubricant respectively, during which time 21.1 cars were handled. The steam locomotive consumed 700 lb. of coal and .05 gal. lubricant per hour while handling 20.1 cars.

Ingersoll-Rand Locomotives

The Ingersoll-Rand Company is constructing for the Erie Railroad an oil-electric locomotive for switching service of a design radically different from any previously constructed by them. The power plant consists of one 825-b.-hp., Ingersoll-Rand oil engine directly connected to a 525-kw. generator. The latter furnishes power to four G. E.-287 traction motors mounted on trucks.

Two 1,600-hp. oil-electric locomotives of new design, one for passenger, the other for freight and switching, are about to be built also by the Ingersoll-Rand Com-



Tractive-Force-Speed Characteristics of Diesel-Electric Compared with Steam Locomotives

pany. The power plants are similar in each of these two locomotives, consisting of two 825-b.-hp. Ingersoll-Rand oil engines in each locomotive, each engine directly connected to a 525-kw. generator. The generators furnish power to four G. E.-286 traction motors mounted on the trucks of the passenger locomotives while on the freight locomotive there are six G. E. Z-1748 traction motors mounted on the trucks. The graph shows the tractive-force-speed characteristics of Ingersoll-Rand Diesel-electric compared with steam locomotives.

Results of Comparative Tests Between Diesel and Steam Locomotives

During the year, the results of comparative tests, between steam and a 300-hp. Diesel locomotives in steel mill service at two plants, were computed. The operating costs as established by these tests for each type of locomotive are shown in one of the tables. At Plant *A* the tests were run from August 1, 1928, to July 31, 1929, four oil-electric locomotives being assigned to this test. The tests at Plant *B* started January 1, 1928, and ended December 31 of that year. Four oil-electric locomotives were also assigned to the tests run at this plant.

Foreign Locomotives

The most interesting development abroad is represented by the German Diesel locomotive with compressed air transmission, built by the Esslingen Locomotive Works and now undergoing tests on the German State Railways. This is a 4-6-4 locomotive with a 1,200-hp. Diesel engine driving an air compressor, the compressed air being admitted to ordinary locomotive cylinders in the usual way. The exhaust of the engine is used to heat the air before admitting it into the cylinders, thus part of the heat which is otherwise wasted with the exhaust is recovered. Besides this, the heating of the air is desirable because it eliminates the unduly low temperature resulting from the expansion and rapid fall in the air temperature.

The prime mover is a 1,200 b.-hp. Diesel engine of the conventional M. A. N. design, directly coupled to

Characteristics of the Baldwin Oil-Electric Locomotive No. 61000

Gauge	4 ft. 8½ in.
Diesel engine—Cylinders, number	Six
Cylinders diam. and stroke	15 in. by 15 in.
Cylinders, type, four-cycle, solid-injection supercharged	
Nominal horsepower	1,000
Electric motors—Number	Four
Type	Westinghouse No. 355
Voltage	600
Electric main generator, type	Westinghouse 478-A
Driving wheels—Diameter	48 in.
Journals	8½ in. by 15 in.
Wheel base, rigid	10 ft. 6 in.
Wheel base, total	35 ft. 6 in.
Length, from center to center of couplers	51 ft. 0 in.
Length over cab	44 ft. 0 in.
Height, over all	15 ft. 8¾ in.
Width, over all	10 ft. 6 in.
Capacity of fuel tanks	800 U. S. gal.
Weight on driving wheels	270,000 lb.
Weight total engine	270,000 lb.
Starting tractive force, maximum	67,500 lb.

Comparative Tests of Diesel and Steam Locomotives

PLANT A

Power	Oil-Electric	Steam
Fuel	$.2311	$1.3081
Water	negligible	.0247
Lubrication and waste	.0581	.0393
Steam coal tower	....	.0685
Labor		
Enginemen	.8937	1.7124
Maintenance		
Repairs, Enginehouse expense, Loco. supplies	1.78	2.7118
Capital Charges		
General works expense	.4186	.4540
Miscellaneous		
Car and locomotive rentals	.1070	.0458
Safety and accident	.1150	.1430
Engineering and drafting	.0250	.0136
Total cost of operation per locomotive-hour	$3.6285	$6.5212
Saving, oil-electric, per locomotive-hour	$2.8927	

PLANT B

Power	Oil-Electric	Steam
Fuel	$.365	$1.210
Water	negligible	
Lubrication	included in supplies	
Locomotive supplies	.080	.020
Enginehouse	.205	.795
Labor		
Enginemen, Ground men	1.660	3.310
Maintenance		
Repairs	.560	1.070
Capital charges		
Interest	.505	.115
Depreciation	.815	.115
Superintendence	.895	1.065
Total cost of operation per locomotive-hour	$5.085	$7.700
Saving, oil-electric, per locomotive-hour	$2.615	

a high-speed compressor. Experiments were made in order to determine if air could be used without fear of explosions in the compressors or locomotive cylinders, which might be caused by oil residues in heated compressed air.

The compressed air at a pressure of about 100 lb. per square inch leaves the heater with a temperature of 600 deg. to 650 deg. F. and enters the cylinders, which have a diameter of about 28 in., through an ordinary throttle and the usual Walschaert gear. The cutoffs can be made as low as 15 per cent. The principal dimensions of this locomotive is shown in one of the tables.

Principal Dimensions of the German Diesel-Pneumatic Locomotive

Engine power	1200 b.hp.
Revolutions per minute	450
Working air pressure	100 lb. per sq. in.
Tractive force at rail	25,000 lb.
Number of cylinders of Diesel engine	6
Diameter of Diesel cylinders	17 1/16 in.
Stroke of Diesel cylinders	16 1/2 in.
Diameter of compressor cylinders	25 in.
Stroke of compressor cylinders	13 3/4 in.
Diameter of locomotive cylinders	28 in.
Stroke of locomotive cylinders	25 5/8 in.
Diameter of driving wheels	63 in.
Speed limit	50 miles per hour

Danish Locomotives

Another interesting development is the four Diesel locomotives built in Denmark, two equipped with Burmeister & Wain Diesel engines and two with Frichs engines. The Burmeister & Wain engine is a single-acting, two-cycle, six-cylinder vertical type engine with solid injection, developng 450 b.hp. at 550 r.p.m. The generator is of the direct-current type with a voltage up to 650 and is directly coupled to the Diesel engine without intermediate flexible coupling. The exciter and the auxiliary generator for charging the batteries are coupled together and driven from the extension of the main generator shaft by a belt. The starting of the Diesel engine is effected by using the generator as a motor from a 33-cell storage battery having a capacity of 500 ampere-hours on the five-hour rate of discharge.

The locomotive has a box type cab and is supported by two trucks, one of which is a four-wheel and the other a six-wheel truck. There are two driving motors, one on each truck. The total length of this locomotive over the buffers is 40 ft. 11 in., the maximum width, 9 ft. 6 in. and the height from the rail, 14 ft. 11½ in. The diameter of the driving wheels is 3 ft. 6½ in., while the diameter of the other wheels is 3 ft. 2 in.

The A. S. Frichs locomotive has a six-cylinder, four-cycle, vertical Diesel engine with solid injection, developing 450 b.hp. at 600 r.p.m. It has a rigid frame construction of the 2-4-4 type. The frame is built of plates, as is customary on European steam locomotives. The driving axles are driven through a double gear transmission directly from the two electric motors and are equipped with S.K.F. roller bearings. The two-wheel truck on one and the four-wheel truck on the other end are of the Danish steam locomotive construction.

The weight of the locomotive is 110,000 lb., of which fuel weighs 1,100 lb., cooling water and water for the boiler 2,200 lb., sand, tools and other accessories, 1,000 lb.

The report concluded with a partial bibliography of books, papers and articles concerning Diesel locomotives.

New Locomotive Economy Devices

The report covering new locomotive economy devices, which has previously been confined entirely to direct fuel-saving devices, includes this year a presentation of practically any device that increases the efficiency of the locomotive, either directly or indirectly. This course was taken because there were no radical changes in various fuel-economy appliances during the past year.

The committee reported developments in high-pressure steam as applied to locomotive boilers, developments in increased tender capacity and developments made in perfecting a control valve for limiting the speed of feedwater pumps when the main throttle is closed, thus controlling the volume of relatively cold water which is pumped into the boiler when the locomotive is drifting or standing. Two such valves are now being developed to accomplish this purpose, one by the Worthington Pump & Machinery Corp., and the other by the Southern Pacific. A report was also made on the use of boiler-check elbow extensions to reduce the possibility of cold water encountering firebox sheets, thus relieving strains caused by unequal temperatures at the top and bottom of the boiler. The upturned elbow extension is applied in the inner end of side boiler checks, the opening at the upper or delivery end being somewhat smaller than the size of the boiler check in order to produce a jet action.

Temperature Tests

In order to demonstrate the value of the upturned elbow, temperature tests were recently made on a heavy Mikado locomotive using the Worthington type *BL* feedwater heater. The engine was standing with no steam used, except that which runs the feedwater pump. The test was started with the water at the bottom of the glass and the pump was run until the glass was full. This took about six minutes. Thermometers were located about the crown sheet level, midway between the crown sheet and mudring, and at about the fire line, all near the front of the fire box. The temperature of the tank water was 49 deg. F.

With the upturned elbow the temperature at the top of the boiler dropped from 384 to 359. The temperature at the middle and bottom thermometers dropped from 382 to 340. This resulted in a final difference in temperature between top and bottom of 19 deg. which is not enough to produce damaging strains through unequal expansion and contraction of the side sheets.

With the elbow removed the top temperature dropped from 384 to 374, the middle temperature from 383 to 319 and the bottom from 384 to 299. The top water cooled only 10 deg. while the bottom water cooled 85 deg., or a difference of 75 deg.

The committee also reported on the application of sludge removers, on the application of roller bearings to steam locomotives, on feedwater heaters and on the application of the locomotive water conditioner.*

The report also gave an account of back-pressure gage applications and what progress has been made in the locomotive valve pilot. The committee stated that since the publication of the last report, the valve pilot has made steady and consistent progress and that a test of this device showed a fuel saving of about 14 per cent on heavy freight power and about 18 per cent more work performed per pound of fuel burned.

* A description of the locomotive water conditioner was published in the March 1, 1930, issue of the *Railway Age*.

Grade Crossing Accidents

WASHINGTON, D. C.

FIVE simple rules for the guidance of motorists at railway grade crossings, through which it is hoped to reduce the list of fatalities and accidents, are recommended by the Committee on Protection of Railway Grade Crossings and Highway Intersections of the National Conference on Street and Highway Safety in a report to be rendered to the third National Conference on Street and Highway Safety, called by Secretary of Commerce Robert P. Lamont, as chairman, to convene in Washington on May 27, 28 and 29.

The five rules are: 1. Slow down or stop. 2. Listen and look both ways; when one train passes, another may be coming. 3. Shift to lower gear if necessary to prevent stalling on tracks. 4. Don't try to beat a train over the crossing. 5. Be doubly careful at night or on strange roads.

The committee strongly urges the removal of all obstacles to clear view at crossings and intersections, together with clearly discernible and easily understood signs and signals that warn the approaching motorist of the presence of the crossing.

Emphasis is placed by the committee on the necessity, however, of prudent conduct in approaching and passing over grade crossings, particularly when on strange roads, or in foggy weather, or at night. The report is based on a careful survey of the conditions surrounding grade crossings and highway intersections, and the hazard and frequency of accidents. It is pointed out that while new grade crossings should be kept at a minimum and existing crossings separated or eliminated as rapidly as possible, grade separation cannot be depended upon for the ultimate solution of the matter.

In the survey of grade crossings, the committee finds:

1. Accidents at grade crossings are causing 8 per cent of the annual number of highway deaths, estimated at 31,000. Accidents at railway grade crossings for the last three years have averaged 5,781 a year for the last three years, of which 4,399 were vehicles struck by trains, 1,272 were cases where automobiles ran into the side of trains, and 110 involved the occupants of other vehicles or pedestrians on crossings.

2. While more than $60,000,000 a year has been spent in the last three years, for railway grade crossing elimination, the total number of grade crossings, as well as highway intersections, is increasing, due to new highway construction. Separation of grades cannot be counted upon because of the financial cost to solve the problem. Establishment of uniform warning signs and signals, and uniform protective measures, and the education of highway users to prudent use of crossings, is the quickest and surest remedy in the view of the committee.

3. Reduction of physical hazards at grade crossings, as well as at intersections, can be facilitated by the construction of practically level and smooth surfaces of road for a distance of 25 to 50 feet on each side of the tracks, and the approach to the tracks on grades not exceeding four or five per cent, as well as the widening of the roadway at the crossings. Railway cars should not be left standing at or near crossings, nor other obstacles, including crops, trees and billboards, so located as to prevent a clear and sufficient view of approaching trains. The committee urges the placing of warning signs and signals in such positions as not to interfere with visibility of the highway users, and the adoption of colors that are easily and plainly discernible.

4. Of the 240,000 grade crossings in the United States, 87.8 per cent are dependent for protection on standard fixed signs. The trend of protection is toward visible automatic signals. A fair division of the costs of installment of automatic signals, as well as the elimination of obstacles to view, is a practical and equitable means of facilitating the work of protection. Signs should be placed at adequate distances from crossings, not to exceed 450 feet, to give warning to motorists, while other signs should be placed nearer the crossing calling for a reduction of speed to safe limits.

5. Careful study of the traffic flow and condition is necessary to properly protect the crossings by signs and signals, and determine the measures that are adequate for safety at each crossing. At crossings on heavily traveled highways, the responsibility of the motorist for prudence and caution is greatly increased. In addition, the committee urges the installation of wigwag red light, or alternate flashing red light signals, at such crossings as a further safety measure.

6. Attention is called to the provisions of the Uniform Vehicle Code and Model Municipal Traffic ordinance, laying down the fundamental rule against reckless driving at crossings, and providing that motorists must keep to the right, and obey the indications of stop-and-go signals, traffic officers, crossing watchmen or crossing gates. Public and school buses and vehicles carrying explosives or inflammables must stop.

7. Special attention of the police to the enforcement of laws and regulations at crossings and highway intersections is suggested. The recommendation is made that in examinations for licensing operators and chauffeurs, tests be made as to the working knowledge of the applicants of rules and regulations governing traffic at grade crossings and road intersections.

8. Despite efforts of the public authorities to eliminate hazards, provide ample warning and control measures, and enforce rules and regulations applicable to grade crossings and highway intersections, the public must be depended upon for voluntary compliance with the rules of proper conduct at such points. The committtee says it is of fundamental importance that all laws and regulations, traffic control measures and protection safeguards should be conformed to by the public.

In going into the accident situation, the committee gives the following summary of highway grade crossing accidents on all steam railroads, based on statistics of the Interstate Commerce Commission:

	1926	1927	1928	1929
Total accidents	5,862	5,596	5,752	5,912
Total fatalities	4,291	2,371	2,568	2,485
Total nonfatal injuries	6,991	6,613	6,666	6,804
Total fatalities and injuries	9,482	8,984	9,234	9,289
Fatalities caused by trains striking, or being struck by trains:				
Pedestrians	293	299	299	307
Passenger automobiles	1,766	1,690	1,820	1,741
Motor buses	15	30	9	7
Motor trucks	281	254	336	337
Others (motorcycles, bicycles, trolley cars, etc.)	136	98	104	93
Vehicles or pedestrians struck by trains:				
Accidents	4,585	4,295	4,357	4,358
Fatalities	2,188	2,078	2,240	2,163
Nonfatal injuries	5,240	4,844	4,688	4,631
Vehicles or pedestrians collided with trains:				
Accidents	1,129	1,205	1,298	1,454
Fatalities	237	259	285	287
Nonfatal injuries	1,661	1,701	1,923	2,104
Miscellaneous grade crossing accidents:				
Accidents	148	96	97	100
Fatalities	66	34	43	35
Nonfatal injuries	90	68	55	69

In an analysis of the figures and statistics relating to the grade crossing accident situation, the committee makes these findings:

"1. The number of grade crossing accidents and fatalities has been nearly constant during the past four years. This is in spite of an increase of 20.4 per cent in motor vehicle registrations in the same period.

"2. Although the recent trend in grade crossing accidents has been more favorable than that for general traffic accidents, the fact that approximately 2,500 persons annually lose their lives at grade crossings emphasizes the continuing importance and magnitude of the question of crossing protection.

"3. For each fatality in grade crossing accidents, there were 3.65 nonfatal injuries, whereas statistics from other sources indicate that for all kinds of traffic accidents, the ratio is approximately 35 serious personal injuries to each fatality.

"4. The proportion of accidents in which motor vehicles collided with the sides of locomotives or trains has increased materially. The ratio of fatalities to nonfatal injuries in such accidents, however, is about 1 to 7, while the corresponding ratio is about 1 to 2.2 in struck-by-train accidents.

"5. Fatalities to occupants of motor buses indicate a decrease during the past three years, but these statistics relate to accidents on steam railroads only. If electric railways were included, the year 1929 would show at least 20 additional fatalities which resulted from a single collision between a bus and an interurban electric train, and no doubt there were other accidents of this character during the period covered by the tabulation. It should be noted that there were a number of serious bus accidents in the first four months of 1930, two of which alone caused more than 30 deaths."

In the discussion of remedial measures in connection with the risk of accidents at crossings, the committee says:

"The crossings that are being eliminated are mainly those where the greatest exposure occurs. The same is true of crossings at which protective devices are installed. Hence the aggregate hazard at unprotected crossings is being reduced more than the figures as to crossings eliminated and protected might indicate.

"Expenditures by the railroads for grade crossing elimination have averaged more than $30,000,000 per year during the past three years. While figures are not available as to the total expended by the public authorities as their share in such work, it is known that this is generally in about an equal amount with the railway contribution. Thus the average total expenditures by the railroads and the public is probably averaging more than $60,000,000 per annum. The cost of elimination of an average grade crossing is not available but it ranges from as little as $25,000 to as much as $500,000 or more.

"A progressive policy should be carried on by the railroads and the highway authorities with respect to elimination. However, as there is a total of about 240,000 highway railway grade crossings in the United States it is obvious that the elimination of all of them by grade separation is economically impossible, at least for the immediate future. Grade separation cannot be counted upon as a principal solution of the problem. Grade separation projects should be carefully selected as to include those which will to the greatest degree reduce hazards and facilitate traffic movement at points of greatest traffic density.

"Chief reliance must be placed upon measures for reduction of hazards at crossings remaining at grade, as follows:

"The physical hazards at grade crossings to which attention should be directed are those arising from—

"1. Layout and condition of the highway at and on the approaches to the grade crossing.

"2. Obstructions of whatever character to clear vision from the viewpoint of the highway user.

"3. Lighting conditions at the grade crossing and visibility of the train equipment as seen by the motor vehicle operator."

Federal Acquisition of New York Canal Opposed

WASHINGTON, D. C.

SENATOR Vandenburg, of Michigan, is conducting a vigorous fight in the Senate to strike out of the rivers and harbors authorization bill, as it passed the House on April 25, the provision authorizing the federal government to acquire the Erie and Oswego canals from the state of New York. Largely on his insistence the Senate committee on commerce has been holding hearings on the bill at which engineer officers of the Army have been questioned as to the reasons for their recommendation that the government take over the canals. Senator Vandenburg is opposing this provision of the bill on the ground that it would interfere with the project for a St. Lawrence ship canal, and the advocates of the St. Lawrence waterway have charged that the New York item was included in the bill as part of a trade by which the New York Congressmen supported the provision for the expenditure by the federal government of $7,500,000 for the Illinois waterway.

Brig. Gen. Herbert Deakyne, assistant chief of engineers and a member of the Board of Engineers for Rivers and Harbors, testified on May 2 that the board had been unwilling to recommend further improvement of the canals unless they were taken over by the federal government and that as it would probably take years to effect the transfer there would be time to consider the extent to which the government should spend money for further improvements. He took the position that the development of the New York canals would not interfere with the St. Lawrence project on the ground that there is business enough for both. Senator McNary asked what would happen if New York declined to transfer its canal except on condition that it be developed into a deep seaway. General Deakyne said that under the terms of the bill the Secretary of War is not authorized to say that any such development is contemplated.

On May 5 Maj. Gen. Lytle Brown, chief of engineers, testified that acquisition of the New York canals would aid materially in the development of the region around the Great Lakes but that it had no relation to the St. Lawrence project except as the increased development might increase the demand for a ship canal via the St. Lawrence. He said he was not familiar with earlier engineer reports unfavorable to proposals for deepening the New York canals, but that he had favored the recommendation that the federal government be authorized to acquire them. He was opposed to further expenditures on the canals as long as they remain under state control and expressed the opinion that any failure of the canals in the past had been due to the fact that the federal government had not taken them over sooner. He said that any study as to the future development of the barge canal should follow rather than precede the taking over by the government. He denied that the board of engineers had been "influenced" in its recommendation.

Representative Dempsey, of New York, chairman of the House committee on rivers and harbors, said that the opposition to the acquisition of the New York canals was based on fear that it would interfere with the St. Lawrence project but that the two routes would serve distinct purposes and would in no way conflict.

Senator Vandenburg predicted that there would be a substantial bloc in the Senate in opposition to the New York proposal.

Representatives of the Mississippi Valley Shippers' conference appeared before the committee on May 6 to urge the inclusion in the bill of an authorization which would represent a positive commitment by Congress in favor of the deepening of the channel of the upper Mississippi river to nine feet. The bill now provides only for some preliminary work pending a final report of a special board of engineers which has submitted an interim report.

Motor Coach Transfer Goes Before I. C. C.

WASHINGTON, D. C.

REQUESTS that the Interstate Commerce Commission investigate the practices of the Baltimore & Ohio in connection with its motor-coach transfer service at New York and Newark were renewed by counsel for other roads serving New York in the argument before Commissioners Farrell, Lewis and Porter on May 7 as to the justifiability of the tariff filed by the Pennsylvania proposing to furnish coach service for parties of 25 to and from points in Greater New York and Newark. The commission has suspended the Pennsylvania tariff but so far has denied the request of the Pennsylvania and other roads that it order an investigation of the B. & O.

H. W. Bikle, general attorney of the Pennsylvania, said that the step it proposes in the tariff had been forced upon it by the insistence of the B. & O. on continuing its practice of transporting parties of 12 or more in its motor coaches to points outside of its advertised routes, even to points to which its tariff rates do not apply, and of delivering individual passengers at any point on the regular routes. Had the B. & O. confined its service to its established inland stations in New York, he said, this case would not have arisen, but now the Pennsylvania is faced with potential competition at every point in the large zone involved. The Pennsylvania is not attempting to meet this competition completely but to meet the off-route competition for parties of 25, he said, and if the B. & O. can do what it is doing without a tariff it certainly is lawful for the Pennsylvania to do what it proposes under a tariff.

C. R. Webber, general attorney of the Baltimore & Ohio, said his company had not intervened in the case, did not oppose the Pennsylvania tariff and had not objected to testimony in support of the tariff except when it seemed that its purpose was to bring about an investigation of the B. & O. practice. He also said that the Baltimore & Ohio would not object to an investigation or to filing a tariff covering its practice if the commission thought it necessary but that the company had not considered a tariff necessary. He took the position that the establishment of the coach service was necessary because the B. & O. had no station in New York and that as it publishes tariff rates to New York it had a right to convey passengers to any part of Greater New York by any means whatever. This statement was in reply to a question by Commissioner Lewis as to whether the B. & O. considered it could go into the taxicab business. He said that the practice of carrying parties of 12 applied to "special routes" which it had no objection to covering by tariff provisions and that he understood that some of the off-route trips referred to, such as that of a baseball team to Montclair, N. J., had involved an extra charge not collected by the railroad company. "We believe we are justified in what we are doing," he added, "and that the Pennsylvania, by what it is proposing to do, has fully justified what we are doing."

C. J. Halpin, appearing for the New York Central, said that his company had not been particularly affected by the B. & O. service but had taken the position that delivery outside of the established routes should be discontinued because it would lead to retaliatory practices on the part of other roads and that the proposal of the Pennsylvania changes the entire situation. If it is to be allowed, he said, the New York Central would have to follow. However, he argued that the Pennsylvania tariff is unduly preferential because it is restricted to passengers to and from points competitive with the Baltimore & Ohio. H. A. Taylor, general solicitor of the Erie, based his argument on the effect of the spread of the practice of furnishing free service for passengers, saying it would drive the railroads into the taxicab business and that the commission ought to consider the effect on the revenues of the other roads. He also referred to the lack of definiteness as to what is proposed to be done both in the Pennsylvania tariff and in the B. & O. practice which is not covered by any tariff.

In rebuttal Mr. Bikle said that, as to the necessity for the B. & O. practice, it already had access to Manhattan island by ferry, and he took the position that the passenger tariffs naming rates to New York contemplated the transportation of passengers only to the ferry termini. Additional service beyond that point he referred to as illegal because not covered by tariff authority, although he apparently did not intend to call it illegal as being a "free" service because he said that the Pennsylvania is not proposing a "free" service but an additional service for the regular rate.

Wabash Asks Control of W. & L. E.

By Harold F. Lane
Washington Editor, *Railway Age*

WASHINGTON, D. C.

THE old rules that "possession is nine points of the law" and that "them as has gits" are about to come into violent collision with the Interstate Commerce Commission's consolidation plan backed up by the transportation act and the Clayton anti-trust law. Whether the encounter will take on any of the aspects of the well-known meeting of an irresistible force and an immovable body is a question which will doubtless attract many ringside observers to the Interstate Commerce Commission's hearing room on June 9, July 8 and later days when hearings are to be held on various conflicting applications for authority to acquire control of the Wheeling & Lake Erie, the Pittsburgh & West Virginia and the Western Maryland. All three roads have been assigned in the commission's plan to a fifth eastern trunk line system designated as System No. 7-Wabash, but the Nickel Plate, itself a part of System No. 6, Chesapeake & Ohio-Nickel Plate, has applied for authority to acquire control of the Wheeling and the P. & W. V.; the P. & W. V. has applied for authority to acquire control of the Wheeling and also the Western Maryland, and now the Wabash has filed a new application seeking authority to acquire control of the Wheeling & Lake Erie. If the commission assents, and possibly before it has a chance to, it is ex-

pected to follow with further applications for the P. & W. V. and the Western Maryland.

Meanwhile the Nickel Plate owns securities representing control of the Wheeling, the Baltimore & Ohio holds what the commission has held to be control of the W. M., and the Pennsylvania, through holding companies, has control of the Wabash and the P. & W. V., although the commission has out orders under the Clayton law directing the Nickel Plate to get rid of the Wheeling stock and the B. & O. to get rid of the Western Maryland stock. It probably has not the authority to say to whom they shall be sold, but whether it shall not be able indirectly to dictate their disposition is one of the questions which arouses interest in the involved and protracted proceedings.

Incidentally Senator Couzens and some members of the Senate committee on interstate commerce and one or two of the commissioners have made some attempts to stop the fight altogether, or at least postpone it for a year, but as this is written the Senator has only a tie vote in his committee on a resolution for that purpose.

The Fifth Trunk Line System

A new start toward the working out of the fifth system favored by the commission in its plan, over the proposals which had been made to it looking toward a four-system scheme for eastern territory, was taken on May 5 when the Wabash filed an application offering to purchase the controlling block of about 53 per cent of the Wheeling stock now held by E. R. Fancher as trustee for the Nickel Plate, pending a decision by the commission as to its ultimate disposition.

The long-standing controversy as to the grouping of the eastern roads thus enters upon a new stage, in which the commission's consolidation plan would seem to be the dominant factor unless the commission should be persuaded to change its mind and modify it. The filing of the new Wabash application immediately followed the withdrawal of the four general plans for the allocation of the eastern roads which were submitted to the commission last year by the Baltimore & Ohio, Chesapeake & Ohio, Wabash and Delaware & Hudson, which had been rendered virtually obsolete by the promulgation of the plan. The B. & O. and C. & O. are expected to file new applications in the light of the plan, although possibly with requests for modifications of it in some particulars and the Wabash has now taken at least one definite step toward carrying out the plan by proposing terms and conditions on which it seeks to acquire the Wheeling & Lake Erie. The absence of such terms and conditions was one of the reasons given by Director Mahaffie of the commission's Bureau of Finance for suggesting that it would be useless to proceed to hearings on the applications filed last year.

The Wabash, of course, does not attempt to give any assurance as the result of negotiations of its ability to buy control of the Wheeling; rather it seeks the assistance of the commission in obtaining it by offering to acquire at cost plus carrying charges the stock which was acquired by the B. & O., New York Central and Nickel Plate, about two-thirds of which was transferred by the B. & O. and N. Y. C. to the Alleghany Corporation, and which is now held for the benefit of the Nickel Plate by the trustee. The amount of the cost is stated as $29,247,034 and the Wabash offers to pay that amount plus 6 per cent and less dividends which have been paid.

A similar application for authority to acquire control of the Wheeling was filed a long time ago by the Pittsburgh & West Virginia, which later supplemented it with an offer similar to that now made by the Wabash. This application is now assigned for hearing on June 9 together with the application of the Nickel Plate for authority to acquire control of the Wheeling. The Wabash had asked that proceedings on the P. & W. V. application be cancelled, but the P. & W. V. desired to proceed with its independent application.

The offer of the Wabash for the Wheeling stock might not in ordinary circumstances be considered as much evidence of ability to acquire it, but as matters stand the commission has some control over it because it has outstanding an order against the Nickel Plate to divest itself of the stock under a Clayton act proceeding. If the commission persists in its advocacy of the fifth system idea it would be expected to approve the Wabash application, require the Nickel Plate to give it up, and the Wabash would be the only likely purchaser.

The Pittsburgh & West Virginia also professes to want the Wheeling and the Western Maryland, thus putting together the Great Lakes-to-Baltimore line of the proposed Wabash system, but the P. & W. V. is controlled by the Pennroad Corporation. One theory at least is that the Pennsylvania is merely holding the Wabash, Lehigh Valley and Pittsburgh & West Virginia through holding companies until it can have assurance that the fifth system plan will go through and that if given such assurance it would voluntarily give up its holdings. On the other hand, the commission has indicated that its approval of the Wabash as a fifth system would only be on condition that it were made independent of the Pennsylvania and it has pending a Clayton act complaint against the Pennsylvania, set for hearing May 21, under which it might be able to force such a separation. The P. & W. V. application for the Western Maryland is assigned for July 8, and as the Baltimore & Ohio is already under an order to divest itself of its Western Maryland stock it might find it somewhat difficult to sell to anyone else than the purchaser selected for it by the commission.

In the correspondence between W. H. Williams, chairman of the Wabash, and Director Mahaffie, which has been made public, no specific mention is made of the Norfolk & Western and the Seaboard Air Line, which the commission also allocated in its plan to the Wabash system. Mr. Williams repeatedly referred to the idea of the fifth system in eastern territory and in the letter in which he withdrew the application filed last year he enclosed a resolution adopted by the Wabash directors authorizing him to proceed toward the working out of the system proposed by the commission but also referring to separate applications. Meanwhile the Pennsylvania controls the Norfolk & Western and the Pennroad Corporation has about 15 per cent of the Seaboard stock, so that it might be disposed either to assist the Wabash in getting them if it desired them or it might decide to ask the commission to allow it to retain them for itself.

In its application to acquire control of the Wheeling the Wabash is still resorting to paragraph 2 of section 5 of the interstate commerce act under which the commission may authorize acquisition of control short of complete consolidation. The other applications referred to are under the same section, rather than under the paragraph of the law relating to complete consolidations, but the commission has informed the roads that it expects them to present much of the same kind of evidence that would be required by its rules of practice relating to consolidation procedure, which include not only a statement of proposed terms and conditions but also an exposition of the relation of the proposed acquisition to the carrying out of a consolidation plan.

Looking Backward

Fifty Years Ago

The gage of the Canada Central [now part of the Canadian Pacific] was recently changed between Saturday morning and Monday, from 5 ft. 6 in. to 4 ft. 8½ in. without interruption to traffic upon the 160 miles of line. Operations at Carleton Place, Ont., Brockville and Ottawa could not be commenced until about 10:30 o'clock Saturday night, because of a three-hour delay of the Pembroke express.—*Railway Age,* May 13, 1880.

The Kentucky legislature has passed a law establishing a state railroad commission of three members, of whom it is provided that "one shall be identified with or represent the agricultural interests, one the mercantile and manufacturing or mining interest, and one the railroad interests. The first in the order named shall be chairman of the commission, and either the first or second shall be a lawyer.—*Railway Age,* May 13, 1880.

The Baldwin Locomotive Works has just delivered to the Philadelphia & Reading [now the Reading] for operation on its Bound Brook line between New York and Philadelphia a fast passenger locomotive with a single pair of driving wheels, 6 ft. 6 in. in diameter [4-2-2 wheel arrangement]. The locomotive is to be used to inaugurate two-hour service between the two cities. To provide greater adhesion in starting and on heavy grades the locomotive is fitted with equalizing levers located between the driving and trailing wheels and operated by a steam cylinder and piston.—*Railroad Gazette,* May 7, 1880.

Twenty-Five Years Ago

G. E. Patterson has been appointed general weight inspector of the Illinois Central.—*Railway Age,* May 12, 1905.

The most important thing which has occurred during the past week's sessions of the Senate committee's hearings on the rate making question is the receipt of the requested opinion from Attorney General Moody. One paragraph of that opinion has dislocated the plans of a number of members of the committee. It is as follows:

"The rate making power is not a judicial function and cannot be conferred constitutionally upon the courts of the United States, either by way of original or appellate jurisdiction."—*Railway Age,* May 12, 1905.

President Roosevelt, speaking at a banquet at Denver, Colo., on May 8, on the subject of railway legislation said in part, "in my judgment it is absolutely necessary that the nation should assume a supervisory and regulatory function over the great corporations which practically control the highways of commerce. * * * We must make up our minds that nothing but harm will come from any scheme to exercise such supervision as that I advocate over corporations, and especially over common carriers, unless we have it clearly fixed in our minds that the scheme is to be one of substantial justice alike to the common carrier and the public."—*Railway Age,* May 12, 1905.

Ten Years Ago

W. M. Neal has been appointed assistant general superintendent of the Toronto district of the Canadian Pacific at Toronto, Ont.—*Railway Age,* May 7, 1920.

The railroads of the country have submitted to the Interstate Commerce Commission statements showing the amount of additional revenues needed to meet increased operating costs, and to adjust their income to the 6 per cent income basis provided in the Transportation Act. The total increase is estimated at $1,017,000,000, and the statements filed constitute formal applications for rate increases to produce that amount.—*Railway Age,* May 7, 1920.

New Books

Books and Articles of Special Interest to Railroaders

(Compiled by Elizabeth Cullen, Reference Librarian, Bureau of Railway Economics, Washington, D. C.)

Books and Pamphlets

Standard Railroad Shop Apprenticeship Courses of Instruction Including Shop Assignment and Related Technical Instruction Units and Regulation Governing the Issuance of Standard Credit Cards and Diplomas. "Tentatively proposed for adoption by the Committee on Standard Railroad Courses representing the State Boards for Vocational Education of Colorado, Wyoming, Arizona, New Mexico, Missouri, Virginia, North Carolina, South Carolina, Georgia, Florida, Tennessee, Alabama, Mississippi, Louisiana, Arkansas, Texas and Oklahoma." "These courses, credit cards, and diplomas were worked out by a group of six railroad shop apprentice instructors of long experience in both railroad shop production and instruction, together with a group of experienced public industrial education administrators, all enrolled in two courses in Part-time Education and Personnel Management during the 1929 summer session of the Colorado Agricultural College, Fort Collins, Colorado. 119 mimeo. p. Issued by The Colorado State Board for Vocational Education, Fort Collins, Colo. *Apply.*

Standards Yearbook 1930. Bureau of Standards Miscellaneous Publication No. 106. See Index under 'rail,' 'railways,' etc. 301 p. Pub. by U. S. Govt. Print Off., Washington, D. C., 75 cents.

Will Present Railway Trends Prevail?, by L. K. Sillcox. "The history of railway transportation is largely a story of the supersession of perfected types of motive power, rolling stock and corresponding roadway improvements. * * * Freight train movements are now made on a comparable basis to passenger service, insofar as dependability of schedules, as well as freedom of movement is concerned, resulting in a lack of congestion, as was formerly experienced, and efficient, ordered, movements prevail. The value, as a single item, of such performance to the public is probably the greatest contribution made by the railways at any time in their history." P. 9. An address at Harvard University. 23 p. Pub. by New York Air Brake Company, New York City. *Apply.*

Periodical Articles

The Cops of the Right of Way, by George Barrows. Something of the organization and purposes of the railroad police, with more of the excitement of their duties. Washington Post, Magazine Section, May 4, 1930, p. 5, 16.

Economies That Cost Little, by Lawrence A. Downs. "In the Illinois Central System, for instance, the small group of principal executives cannot conceivably be in close enough contact with all the details of the business to see all the opportunities for economies and improvements. * * * But if we can get even ten per cent of the other 50,000 employees thinking in this direction, we have thinking assistants in every sub-division of the business, and so obtain a large proportion of the possible and practicable ideas." p. 466. System, May 1930, p. 401-403, 464,466.

The New Role of Aluminum. "Economics of aluminum structural shapes" p. 535 suggests that railroads can reduce dead weight of equipment by using present-day specifications, but replacing heavier members by lighter members. "This is an easy and comfortable way, and is made possible today by the availability of aluminum structural shapes." Mechanical Engineering, May 1930, p. 533-535.

A Revolution in Engineering Efficiency, by George Bronson Rea. "A Japanese technical mission goes to Russia to teach the Russian engineers how to repair railway rolling stock." This article states that the time required for a general overhaul of a locomotive in Japan is six days. Far Eastern Review, March 1930, p. 107-109.

Odds and Ends of Railroading

Following the River

The James river line of the Chesapeake & Ohio, from Richmond, Va., to Clifton Forge, may probably lay claim to following the same river for a longer distance than any other line. The railroad follows the James river, never getting more than half a mile away, for 230 miles. Since it was originally built on the old canal tow-path, it is directly on the bank of the river for most the distance.

Mr. Willard's Ex-Bosses

Among the honored guests at a recent testimonial dinner given to Daniel Willard, president of the Baltimore & Ohio, were two men who used to give him orders. Both of them said that he obeyed them, too. One was Willis H. Ford, who was train dispatcher on the Connecticut & Passumpsic River when Mr. Willard was an engineman there. The other was Robert McVicar, the first engineman for whom Mr. Willard fired.

Railroad Talk

Legal decisions ordinarily provide pretty dry reading for the layman. A conclusion recently handed down by a North Carolina court, however, contains a refreshing insight into human frailties. A suit had been brought by the owner of a raft which had been smashed by a railroad employee in order to save a railroad bridge from being swept away during a flood. The court said: "Evidence that a railroad boss, fighting to save a railroad bridge by breaking up a raft of logs broken loose from its moorings and lodged against a pier of the bridge by a freshet, exclaimed 'Damn the logs' when requested by the owner of the raft not to break it up, is not evidence of wilful and wanton destruction of the property. The wonder is that he had not said more."—Wall Street Journal.

Along Life's Railway

Many of the Illinois Central's shopmen in Paducah, Ky., have the privilege of attending a church at which one of their former fellow-workers is the pastor. The church is the Immanuel Baptist Church. Its pastor, the Rev. E. Frank Adams, served the Illinois Central nine years at Paducah as yard laborer and car repairer. His congregation now numbers more than a thousand members, and he has a wide reputation as a forceful and eloquent speaker. Many of his illustrations are taken from his railway work.

Another former railroader in the South who is attaining considerable fame as a minister of the gospel is F. L. McMillan, Smyrna, Ga., formerly an engineman on the Louisville & Nashville, whose railway friends have financed him on many preaching trips throughout the Southeast.

Railroaders All

Gene Autry, telegrapher for the Frisco at Sapulpa, Okla., has just finished making 16 phonograph recordings of his singing and guitar playing for a national phonograph company. Characteristically, one of the songs is "Waitin' for a Train."

The eleven molders employed in the Missouri-Kansas-Texas shops at Parsons, Kan., have a combined service record of 345 years. Four of them have been in the service more than 40 years each.

Percy T. Strahan, agent of the Pennsylvania at Kalkaska, Mich., is active in civic affairs as well. He was recently elected president of the Kalkaska County Chamber of Commerce. Another Pennsylvania employee interested in civic affairs is J. J. Sullivan, agent at Bloomville, Ohio, who was recently elected mayor of that city.

O. D. Snider, yard conductor for the Pennsylvania at Kokomo, Ind., is heartbroken. He has lost his pet switch-key, which he has carried with him for more than 20 years.

C. M. Zimmerman, machinist helper for the Louisville & Nashville at Etowah, Tenn., decided that his son should have an uncommon name, so he christened him Xenophon Young. The boy is known as "X. Y. Z." for short.

To Edward Creary Strickland, former engineman for the Louisville & Nashville, goes the distinction of entering upon the most peculiar occupation after leaving railroading. He is now shell-fish commissioner for the state of Florida.

What Do You Know About Railroads?

Here are the answers to the 50 railroad questions propounded last week. How was your score?

1—New York Central, New York to Chicago.
2—Pennsylvania, New York to Chicago.
3—Pennsylvania, New York to Washington.
4—Southern Pacific, New Orleans to San Francisco.
5—Rock Island-Southern Pacific, Chicago to California.
6—A train which makes a nonstop run from London to Edinburgh, 392 miles.
7—A famous French train which runs from Calais to the Riviera.
8—The Union Pacific, building west from Council Bluffs, and the Central Pacific, building east from Sacramento.
9—The overseas extension of the Florida East Coast.
10—Pennsylvania.
11—Canadian National.
12—It is now part of the Canadian National.
13—The Santa Fe.
14—Atchison, Topeka & Santa Fe.
15—New York, New Haven & Hartford.
16—Delaware, Lackawanna & Western.
17—Baltimore & Ohio.
18—New York Central.
19—Central Pacific.
20—Great Northern.
21—Baltimore & Ohio.
22—George Stephenson.
23—An engine built by Stephenson.
24—The Stourbridge Lion.
25—Peter Cooper, who built the "Tom Thumb" for the Baltimore & Ohio.
26—George Westinghouse.
27—George Pullman.
28—George Pullman.
29—Dining Service.
30—The number of the New York Central locomotive which made the record speed of 112 miles per hour in 1893.
31—Types of locomotives.
32—It describes the number of wheels, four in front, six driving wheels, and two trailing wheels under the cab—a Pacific type.
33—Fifty six and one-half.
34—The car attached to the locomotive which carries fuel and water.
35—On a freight or construction train, the car for workmen or train crew.
36—Cowcatcher.
37—Roundhouse.
38—Stop.
39—Red.
40—It automatically goes to the stop position.
41—A second section following.
42—Two long blasts and two short blasts.
43—An engine.
44—The engineer.
45—The fireman.
46—Order of Railway Conductors.
47—Refrigerator cars.
48—A head-on or rear-end collision.
49—"Casey Jones."
50—"I've Been Workin' on the Railroad," and "Drill, Ye Tarriers, Drill."

NEWS *of the* WEEK

Detroit Union Produce Terminal, served by Wabash, Pennsylvania and Pere Marquette

THE EASTERN CAR FOREMEN'S ASSOCIATION will hold its next meeting at 29 West Thirty-Ninth street, New York City, on Friday evening, May 23. G. W. Ditmore will speak on lubrication and rule 66.

S. B. ALEXANDER of Rolling Fork, Miss., resigned as a member of the Mississippi Railroad Commission on May 2 following an investigation by the State Legislature of alleged irregularities in the granting of motor coach line permits by the Commission.

THE TWELFTH ANNUAL NATIONAL METAL EXPOSITION, including the annual meeting of the American Society for Steel Treating and other features of the National Metal Congress, will be held at the Stevens Hotel, Chicago, September 22-26, inclusive.

THE AMERICAN SHORT LINE RAILROAD ASSOCIATION has filed with the Interstate Commerce Commission an answer to the petition of the American Railway Association for a re-opening of the proceeding relating to the rules for car-hire settlement, asking the commission to deny the petition.

THE NATIONAL ASSOCIATION OF PURCHASING AGENTS will hold its fifteenth annual convention at the Hotel Stevens, Chicago, from June 16 to 19, inclusive. The transportation group, headed by Hobart W. Mears, purchasing agent of the Matson Navigation Company, San Francisco, Cal., will hold a dinner meeting at 6 p.m., Monday, June 16. Discussion of the subject, "Paint Specifications and What They are Worth," will be led by Percy H. Walker, chief, paint section, U. S. Bureau of Standards.

Great Northern 4-8-4 Type Locomotives—Correction

In describing the engine truck of the 4-8-4 type locomotive built by the Baldwin Locomotive Works for the Great Northern in the April 26, 1930, issue of the *Railway Age*, page 965, the statement was made "The design is of the constant-resistance equalized type." The term "Constant-resistance equalized type" should not have been used in connection with this truck, due to the fact that the bolster is hung on three-point suspension links.

New York Railroad Club to Hold Two Outings

The New York Railroad Club announces that in place of the usual one-day outing there will be two gala days this year—a boat outing on a Hudson River Line boat on Thursday, July 10, and a railroad and railroad supply men's championship golf tournament at Wing Foot Golf Club, Mamaroneck, in August.

N. S. C. Plaques

The National Safety Council has announced the 1929 winners of plaques which it awards to the railroads having the best safety record during the year. They are as follows:

Group A (100 Billion Man-Hours or More)—Union Pacific System.
Group B (50 to 100 Billion Man-Hours)—Union Pacific Company.
Group C (20 to 50 Billion Man-Hours)—Oregon-Washington Railroad & Navigation Co.
Group D (10 to 20 Billion Man-Hours)—Los Angeles & Salt Lake.
Group E (5 to 10 Billion Man-Hours)—Gulf, Mobile & Northern.
Group F (2 to 5 Billion Man-Hours)—Duluth & Iron Range.
Group G (Less than 2 Billion Man-Hours)—Conemaugh & Black Lick.
Group H (Pullman Company Zones)—Chicago Central Zone.

Second World Power Conference

Engineers, scientists, economists, and other representatives from about fifty different countries are expected to attend the Second World Power Conference which will be held in Berlin, Germany, from June 16 to 25, with a view to improving, from the technical and commercial point of view, the methods of generating and distributing energy in every form and to promoting the use of energy by international collaboration. A series of addresses on the present and future power supply problems of general public interest will also be delivered and, upon the conclusion of the conference, the members will be afforded an opportunity of visiting the most important power and industrial plants in Germany.

New York State Laws

The Governor of New York has approved, as Chapter 830 of the Laws of 1930, the Cornaire bill, creating a temporary state commission of five members to make a survey of proposed bridge projects on the St. Lawrence River, and appropriating $50,000 for the expenses of the commission. The Governor vetoed the Graves bill.

The governor has approved the bill appropriating $500,000 to be expended by the Niagara Frontier Bridge Commission in the construction of certain bridges.

The governor has vetoed the bill which would have required approach warning signs at highway crossings to be painted yellow.

The governor has also vetoed the Thayer bill proposing to extend for five years Section 53-a of the Public Service law, which allows only until January 1, 1931, for railroads within New York city and vicinity to complete electrification.

Seek Lower Grain Rates to Maritimes

Judgment was reserved last week by the Board of Railway Commissioners of Canada at Ottawa in the application for a reduced grain freight rate from the lakehead to the maritime ports of Saint John and Halifax. The application was presented jointly by the Halifax Harbor Commission and the Maritime Board of Trade, and called for a rate of 19.34 cents per hundredweight for grain shipped for export over the National Transcontinental line of the Canadian National. The present rate is 35.5 cents a hundredweight.

Evidence and argument consumed four and a half days, the case being considered one of the most important to come before the board for some time. It is an aftermath of the successful application of the City of Quebec for a rate of 18.34 cents per cwt. for that port.

The application was opposed by both the Canadian National and the Canadian Pacific on the grounds that the proposed rate would be lower than the actual out-of-pocket cost of hauling the grain. The present rate, it was argued, corresponds with the cost figures, but allows no profit to the railroads.

The arguments of those in favor of the application centered around the claim that the Transcontinental line was conceived and constructed funda-

mentally to provide a means of fostering maritime ports as the exporting centres for the grain trade. Because of the rates, this never has materialized. The city of Vancouver was pointed to as a port whose export trade has increased tremendously as a result of a special grain rate. It was submitted that a corresponding trade would result in the eastward flow of the export trade if lower rates to Saint John and Halifax were put into effect.

Propose Another Railway to Hudson Bay

A group of British capitalists who control large mineral deposits north of Lake Athabaska, it is understood, are behind the application for a charter for the Hudson Bay Western Railway. The proposed line would link Fond du Lac on Lake Athabaska with Churchill, the new port on Hudson Bay.

Notice of an application to Parliament for the charter is given in the last issue of the Canada Gazette. O. E. Culbert, solicitor for the applicants, declined to reveal the names of the promoters of the scheme or any details. The matter will come before Parliament in the form of a private bill and will probably be referred to the railway committee.

Lake Athabaska is in the extreme north of the province of Saskatchewan and the line of the railway will run almost straight east, though deviations from this course will be necessary owing to obstacles in the form of muskegs.

For some years past, considerable prospecting has been done in the area about Lake Athabaska, with opening of regular steamship services through Hudson Bay. The distance from Fond du Lac to Churchill is in the neighborhood of 500 miles. Construction of a railway over this distance would give the mineral area of northern Saskatchewan an outlet to the sea.

British Columbia Hopes to Sell Its Railway

Definite negotiations for the possible sale of the Pacific Great Eastern Railway to the Canadian Pacific will begin at Vancouver in June at a conference between Premier Tolmie and E. W. Beatty, president of the Canadian Pacific Railway.

Announcement that Mr. Beatty would go to Vancouver within the next month or six weeks and confer with the Premier on the P. G. E. problem was regarded as the most significant news concerning British Columbia's railway problem since the present ministry took office. This will be the first time that an executive of either of the transcontinental railway systems has ever come to British Columbia to talk about the P. G. E. In the past the government of British Columbia, desperate to dispose of its railway, has always gone east to see the railway executives, always without results.

Mr. Beatty will confer with the Premier as a partner with the government and the Canadian National in the survey of the P. G. E. land grants, and especially the land lying along a possible Peace River extension of the provincial line. The report of this survey, under compilation now, will be ready for him on his arrival, and he and the Premier are expected to go over it together.

Automatic Block Signals Without Track Circuits

An automatic signaling apparatus is in experimental use on the line of the German State Railways between Blankenese and Wedel, near Hamburg, the distinctive feature of which is the recording of the passage of the rear end of a train, out of one block and into the next one, thus making possible the transmission of satisfactory information that the whole of a train has passed, notwithstanding the absence of electric current in the rails. This is accomplished by means of a selenium cell, with lights arranged on the principle used in Baseler's automatic train control which has been in use on the German Railroads for the last year and which was described briefly in the *Railway Age* of March 16, 1929, page 634. (An illustrated description will be found in *Railway Signaling* for June, 1929.)

The present arrangement, which is credited to Mr. Hampke, of Altona, was devised to meet the demand for an automatic space interval system on German lines where steel sleepers are used.

Mr. Hampke fixes on a post at the side of the road an electric lamp which throws an intense concentrated ray of light on to the side of the passing train; with the light is a selenium cell which forms a part of the block signal circuit. A mirror fitted to the tail light of the train instantly reflects the roadside light so that the rays strike the selenium cell and thereby close the signal circuit.

In the experimental installation, the roadside light is energized only when a train is approaching. Failure of the apparatus would have no worse result than to delay the following train because of the absence of a proceed signal. It is said that the experiment has given satisfactory results.

Soviet Delegates Outline Plans for American Technical Assistance

Interviewed following the completion of a four weeks' coast-to-coast trip by the delegation of Soviet railway executives who have been studying operating methods in this country and Canada, D. E. Sulimov, vice-commissar for transportation of the Soviet Union and head of the delegation, outlined recently the relations which Soviet railway officials hope to establish with the American railway industry. After describing briefly the five-year plan of reorganization and new construction under which Soviet railways are now operating, Mr. Sulimov spoke as follows:

"The reorganization of our railway system to a point where it will be able to cope with the rapid development of industry and agriculture will necessitate the construction of several thousand powerful locomotives and large-capacity freight cars. The rolling stock will be equipped with automatic brakes and couplings and there will be an extensive reconstruction of railway junctions and road beds. This will require from $3,500,000,000 to $4,500,000,000.

"We realize well that we shall not be able to carry through this program in the most effective manner unless we avail ourselves of the great fund of experience accumulated by the most technically advanced countries, particularly the United States. We have come to the conclusion that the achievements of the United States in railway transportation and in the field of industries serving transportation, especially locomotive and car building, are far above those that we have seen elsewhere.

"A number of other circumstances draw us closer to the United States in regard to railway developments. The climatic conditions and the great distances to be covered correspond to a great extent to those in our country; what is perhaps more important, we believe that the United States, more than any other country, is in a position to understand the rate of development of Soviet economy.

"We are not able to state definitely at this time the form and the scope of the business arrangements which we hope to make in this country. We have in mind negotiating an agreement for designing the types of powerful locomotives and freight cars best adapted to our conditions. We expect also to take up the question of technical assistance by American firms in the production in the U. S. S. R. of rolling stock and other equipment selected by us.

"We should be glad to arrange for a regular exchange of information between the railroads of the United States and of the Soviet Union. This would give us the possibility of systematically applying the technical experience of this country in the field of railroad operations to the complicated problems involved in reorganizing the Soviet railways."

A Novel Grade Crossing Litigation

A remarkable judgment in an unusual suit against the Canadian National Railways in Montreal as the result of a level crossing fatality in that city has established an interesting issue and created a new jurisprudence in Canada on such questions.

In entering into a private agreement with the St. Lawrence Brick Company to maintain a private railway crossing at Lapraire, the Canadian National Railways violated the provisions of the Railway Act, which does not take cognizance of private crossings, Mr. Justice Loranger, of the Superior Court, in Montreal last week, declared in rendering judgment condemning the railway to pay Dame Yvonne Laurin $5,000 as compensation for the death of her husband, who was killed when the truck he was driving was struck by a train at the level crossing on September 17, 1927.

Two other actions resulted from the

accident. In one Albert Beauregard, suing for the value of the truck destroyed, was awarded $3,112.50, payable by the Canadian National Railways and the St. Lawrence Brick Company, jointly. In the second Alfred Lariviere, suing as tutor to Aurore and Alice Lariviere, whose father was killed while riding as a passenger on the truck, was awarded $7,000, payable by the railway company.

The circumstances surrounding the accident, as recited by Mr. Justice Loranger, are interesting as leading to the issues raised in the action.

By an order dated December 16, 1924, the Railway Commission, at the request of the parish of Laprairie, ordered that a crossing in front of the St. Lawrence Brick Works should be transferred a few miles farther away. At the same time the commission ordered the old crossing closed.

In conformity with this ruling, the road was changed and the former crossing closed. Closing of the crossing caused some inconvenience to the brick company which, after some negotiation, entered into a contract with the Canadian National Railways, which authorized the opening of a private crossing on condition that the brick company would maintain the crossing and guarantee the railway company against all damages resulting from the passage of trains at this spot, even if these damages resulted from negligences on the part of the railway employees.

"In conformity with this contract," Mr. Justice Loranger declared, "the crossing was re-opened, first, in violation of the Railway Act, which does not permit a private crossing, and second, in violation of the ruling of the Railway Commission, dated October 16, 1925, which ordered the closing of this crossing, and, third, in violation of the Railway Act, which orders that fences should be erected and maintained on each side of the railway.

"The proof reveals beyond doubt that there was no fence or gate at this spot on the day of the accident, that more than six months previous the gate on one side of the road had fallen, and that on the other side there was no gate at all. Moreover, it is clearly established that even when there were gates, they were constantly open, except, it is stated, during the night.

"There is no shadow of doubt that this level crossing was opened and maintained with the consent of the defendant, in flagrant violation of the provisions of the statute and in contravention of the order of the Railway Commission, based upon a constance jurisprudence."

The plaintiff contended that the railway was responsible for all damage arising from the accident. Dealing with this point, His Lordship said that the violation of a statutory obligation gives rise, as regards the company in default, to the obligation to pay all the damages which result therefrom. He cited article 385 of the Railway Act, which defines the liability of the railway companies when they violate express provisions of the statute.

"This text is formal and clear," His Lordship commented. "No doubt it is rigorous, but it is easily explainable. The railway companies obtain from the government special rights and privileges. They operate a transportation system in the interests of the public. They must at the same time protect the public interests. If they are permitted to construct railway lines through towns and villages and to cut through cultivated land and cross roads where the public circulates, these companies must, and in all justice are bound to, follow rigorously and to the letter the conditions which the law imposes upon them in this exploitation.

"The proof is positive, as we have indicated; the defendant violated its statutory obligations, first, in permitting a private road in violation of the law and of the ruling of the Board of Railway Commissioners; second, in not fencing its right-of-way on each side; third, in not erecting gates, even if it was assumed that this crossing was legally permitted; and, fourth, in allowing this crossing to remain open without any protection to the public."

Pennsylvania to Distribute Historical Posters

The Pennsylvania, in an effort to interest the public in the significance of historical scenes and events, and to emphasize the identity of the Pennsylvania with the country's growth and its own development as a national institution, is displaying historical posters on the principal employee bulletin boards, in the offices of the company's representatives throughout the United States and foreign countries, and in all stations and ticket offices. The posters, in full color, have been designed by a well-known painter and deal with patriotic subjects. During the last few years, the management has made an exhaustive study of posters used by railroads in this country and in Europe with a view to developing a series of posters for use on its own lines.

The First Poster to be Displayed

The series of posters will be different in both subject matter and execution from any previously used by American transportation systems. They will be known as Pennsylvania Railroad patriotic posters, and will have educational, as well as esthetic, value. There will be 12 posters in the series, each of which will deal with an outstanding scene or event in the early history of the development of the United States. The first poster, which was placed on display on May 1, depicts the ringing of the Liberty Bell in the tower of the State House in Philadelphia prior to the reading of the Declaration of Independence before the citizens who gathered in the square south of the State House to hear liberty proclaimed. The second poster, the subject of which will be Daniel Boone, will follow the first by about a month, and this will continue until in approximately a year the entire series will have been displayed.

Western Railway Club Holds Annual Dinner—Officers Elected

The annual dinner of the Western Railway Club was held at the Hotel Sherman, Chicago, Monday evening, May 5. Following a musical program of unusual merit, furnished by employees of the Chicago & Alton, the feature of the evening was an address by Rev. Dr. George Craig Stewart, rector of St. Luke's Episcopal Church, Evanston, Ill. Doctor Stewart discussed the general subject, "Machinery and Men," commenting on the trend toward the increased use of machinery in this modern age and the attendant problems of unemployment and trade readjustment, for which, he said, industrialists and economists have not yet found the solution. He said that we know the credit side of the machine age, but that we must consider the debit side, represented by bread-line increases and overcrowded park benches. He called attention to the fact that man himself is a machine, but much more than a machine, and cited psychological tests in which, under the influence of adverse hypnotic suggestion, men exerted only 30 per cent of their capacity, whereas, on another occasion, under favorable hypnotic suggestion, the same men actually performed 140 per cent of what was supposed to be their maximum capacity. He said that this performance was made possible by drawing on reserves such as no machine has.

In opening the meeting, President H. P. Allstrand, principal assistant superintendent of motive power and machinery of the Chicago & North Western, mentioned the well-balanced program of meetings held by the club during the past year and expressed particular appreciation for the efforts of C. M. House, superintendent of motive power and equipment of the Chicago & Alton, and J. E. Bjorkholm, assistant superintendent of motive power of the Milwaukee, in getting new members. The present membership is 2,068, composed of 1,345 railway men, 691 supply men and 32 honorary members. A total of 256 new members was secured during the year.

(Continued on page 1152)

Revenues and Expenses of Railways

MONTH OF MARCH AND THREE MONTHS OF CALENDAR YEAR 1930

Name of road		Av. mileage operated during period.	Operating revenues: Freight.	Passenger.	Total (inc. misc.)	Operating expenses: Maintenance of Way and structures.	Maintenance of Equipment.	Traffic.	Transportation.	General.	Total.	Operating ratio.	Net from railway operation.	Operating income (or loss).	Net ry. operating income.	Net ry. operating income, 1929.
Akron, Canton & Youngstowa	Mar.	171	$263,881	$154	$274,300	$42,049	$29,373	$14,694	$68,508	$18,653	$172,883	63.0	101,417	83,022	61,138	97,976
	3 mos.	171	717,931	283	744,997	104,793	81,775	44,440	212,553	54,767	493,880	66.3	251,117	195,945	130,888	256,435
Atchison, Topeka & Santa Fe	Mar.	9,630	10,808,628	2,408,665	14,761,093	3,298,868	3,474,382	415,915	4,873,146	467,029	12,499,052	84.7	2,262,041	1,243,668	1,109,561	3,793,974
	3 mos.	9,630	31,504,236	7,845,282	43,588,938	7,080,122	10,200,667	1,293,652	14,460,431	1,377,335	34,412,400	78.9	9,176,538	5,774,212	5,534,414	10,872,303
Gulf, Colorado & Santa Fe	Mar.	1,943	1,771,574	136,432	2,033,472	632,256	500,149	54,675	694,535	83,941	1,961,701	96.5	71,771	—24,983	—182,954	187,579
	3 mos.	1,943	5,098,179	429,334	5,888,440	1,757,340	1,473,021	170,947	2,043,943	231,738	5,659,573	96.1	228,867	—57,914	—499,934	757,458
Panhandle & Santa Fe	Mar.	1,569	1,064,886	82,978	1,234,735	603,819	302,168	18,599	389,075	41,133	1,337,442	108.3	—102,707	—154,633	—291,791	103,536
	3 mos.	1,569	3,201,869	250,118	3,689,208	1,106,277	879,387	59,784	1,171,687	122,914	3,297,066	89.4	392,142	234,535	—149,624	630,795
Atlanta & West Point	Mar.	93	158,923	35,813	221,645	28,463	38,308	11,427	86,542	11,760	180,419	81.4	41,226	28,162	13,625	—1,928
	3 mos.	93	433,735	129,311	641,190	69,831	113,589	36,104	247,248	35,026	515,967	80.5	125,223	83,199	45,221	38,556
Western of Alabama	Mar.	133	198,445	35,833	254,960	37,889	45,900	11,607	83,093	12,493	194,152	76.1	60,808	47,527	37,041	11,052
	3 mos.	133	512,938	138,706	716,236	105,513	137,701	36,908	240,535	37,792	568,131	79.3	148,105	103,299	97,460	46,142
Atlanta, Birmingham & Coast	Mar.	639	317,392	16,662	372,812	91,386	80,657	26,519	159,101	19,186	387,477	103.9	—14,665	—29,726	—53,158	—33,228
	3 mos.	639	879,389	51,809	1,048,248	260,901	236,735	85,353	456,584	58,076	1,130,296	107.8	— 82,048	—127,444	—179,350	—107,006
Atlantic Coast Line	Mar.	5,154	5,140,831	1,638,861	7,504,235	925,433	1,125,877	173,636	2,240,843	181,679	4,755,306	63.4	2,748,929	2,048,533	1,881,318	2,566,209
	3 mos.	5,154	13,502,460	4,780,539	20,188,618	2,621,733	3,321,964	544,268	6,375,308	538,154	13,707,358	67.9	6,481,260	4,753,142	4,300,439	6,149,800
Charleston & Western Carolina	Mar.	342	245,894	7,393	262,822	63,697	41,507	6,958	94,631	7,566	214,330	81.5	48,492	30,992	27,474	78,016
	3 mos.	342	662,711	24,162	713,272	181,910	114,719	21,884	276,124	21,803	616,411	86.4	96,861	40,351	28,095	123,243
Baltimore & Ohio	Mar.	5,658	15,150,808	1,447,961	17,805,405	2,072,570	4,049,463	561,639	6,326,836	704,520	13,931,182	78.2	3,874,223	2,970,544	2,764,755	4,182,984
	3 mos.	5,658	43,408,907	4,512,553	51,231,181	6,215,684	11,537,129	1,630,174	19,008,801	2,072,660	40,983,811	80.0	10,247,370	7,334,867	6,805,218	9,221,571
Baltimore & Ohio Chic. Term.	Mar.	85	.....	.....	325,555	45,406	54,079	2,545	202,448	20,266	331,238	101.8	—5,683	—63,631	42,766	62,870
	3 mos.	85	.....	.....	930,428	112,310	143,165	7,620	545,029	59,786	887,654	95.4	42,774	—142,113	216,681	213,272
Staten Island Rapid Transit	Mar.	23	60,294	119,909	188,807	19,513	14,300	2,256	103,420	15,492	154,981	82.1	33,826	14,784	—6,205	17,126
	3 mos.	23	183,316	353,176	563,911	44,857	44,836	6,421	304,565	46,040	446,719	79.2	117,192	63,150	36,729	12,272
Bangor & Aroostook	Mar.	619	907,789	83,002	1,024,284	113,787	145,531	5,812	215,113	29,923	512,791	50.1	511,493	427,953	405,791	323,352
	3 mos.	619	2,530,696	227,538	2,849,394	342,888	406,204	16,930	653,158	82,114	1,509,041	53.0	1,340,353	1,116,968	1,059,940	872,001
Belt Ry. Co. of Chicago	Mar.	57	.....	.....	568,459	59,213	64,196	4,122	277,079	11,288	415,898	73.2	152,561	96,531	147,685	154,686
	3 mos.	57	.....	.....	1,777,103	160,854	205,420	12,180	869,911	35,107	1,283,472	72.2	493,631	327,040	450,122	462,105
Bessemer & Lake Erie	Mar.	227	615,399	5,612	637,030	125,544	325,525	14,081	243,764	35,313	746,509	117.2	—109,479	—134,429	—119,425	183,137
	3 mos.	227	1,843,224	17,717	1,910,034	248,261	976,469	42,084	710,491	108,506	2,092,863	109.6	—182,829	—264,886	—173,375	280,823
Bingham & Garfield	Mar.	33	34,324	.....	35,294	14,425	9,604	1,462	8,747	4,736	39,104	110.8	—3,810	—8,856	7,689	26,862
	3 mos.	33	100,581	.....	103,289	12,839	25,355	4,900	26,454	14,314	84,249	81.6	19,040	—691	50,114	82,128
Boston & Maine	Mar.	2,090	3,914,284	1,107,384	5,853,282	925,309	952,131	87,626	2,200,616	231,718	4,420,762	75.5	1,432,520	1,168,030	977,438	1,106,460
	3 mos.	2,090	11,511,104	3,640,311	17,432,804	2,775,556	2,836,374	265,634	6,579,646	657,253	13,186,608	75.6	4,246,196	3,467,166	2,797,068	3,016,652
Brooklyn East. Dist. Terminal	Mar.	11	116,323	.....	118,392	11,780	16,421	73	37,804	5,562	71,640	60.5	46,752	40,192	40,192	41,075
	3 mos.	11	337,486	.....	344,389	24,452	48,564	832	110,007	16,927	200,782	58.3	143,607	122,514	122,514	127,060
Buffalo & Susquehanna	Mar.	253	135,748	994	147,382	29,194	46,709	2,051	46,859	13,811	138,624	94.1	8,758	18,548	32,562	58,277
	3 mos.	253	398,142	2,749	430,705	87,488	152,503	6,028	134,330	29,460	409,809	95.1	20,896	26,531	70,594	147,275
Buffalo, Rochester & Pittsburgh	Mar.	601	1,188,237	54,674	1,283,794	131,229	360,208	37,214	514,041	44,768	1,089,557	84.9	194,237	154,237	167,473	244,817
	3 mos.	601	3,630,277	181,062	3,930,428	395,641	1,146,215	112,001	1,545,453	136,617	3,342,176	85.0	588,252	468,189	525,814	734,306
Canadian Pacific Lines in Maine	Mar.	233	267,408	51,990	336,797	25,280	75,489	7,400	132,715	5,370	246,254	73.1	90,543	76,043	54,644	82,224
	3 mos.	233	703,852	113,815	864,709	64,911	186,942	21,132	356,631	13,961	643,577	74.4	221,132	177,632	117,568	171,959
Canadian Pacific Lines in Vermont	Mar.	85	103,227	28,528	153,436	13,572	47,617	1,909	96,211	2,811	162,120	105.6	—8,684	—12,704	—43,380	—16,862
	3 mos.	85	298,024	88,286	446,186	41,237	113,974	5,505	284,470	7,570	452,756	101.4	—6,570	—18,630	—109,441	—71,796
Central of Georgia	Mar.	1,944	1,611,810	311,618	2,176,522	267,861	367,291	59,595	805,224	82,616	1,603,221	73.7	573,301	423,028	396,540	508,265
	3 mos.	1,944	4,326,092	929,773	5,902,714	692,193	1,027,250	200,937	2,284,195	249,933	4,508,678	76.4	1,394,036	1,001,281	978,885	1,104,032
Central New Jersey	Mar.	692	3,281,431	640,095	4,261,228	425,314	1,039,867	53,661	1,724,437	131,028	3,402,512	79.8	858,716	499,687	376,768	469,284
	3 mos.	692	10,000,054	1,986,222	12,808,780	1,277,675	2,996,662	181,292	5,172,394	405,946	10,116,346	79.0	2,692,434	1,946,994	1,555,547	1,870,713
Central Vermont	Mar.	469	526,556	80,035	655,707	85,587	119,890	18,205	297,421	25,783	548,713	83.7	106.994	91,004	105,287	174,431
	3 mos.	469	1,418,128	249,050	1,837,278	238,366	333,723	52,421	842,366	81,052	1,553,978	84.6	283,300	235,317	297,218	407,837
Chesapeake & Ohio	Mar.	2,740	8,387,821	431,071	9,216,095	1,458,219	2,205,065	152,604	2,462,330	268,544	6,567,970	71.3	2,648,125	1,947,783	2,030,296	2,639,827
	3 mos.	2,738	27,314,687	1,279,964	29,712,152	4,495,442	6,551,399	442,895	7,698,611	858,476	20,110,300	67.7	9,601,852	7,501,067	7,892,066	8,596,323
Chicago & Alton	Mar.	1,028	1,476,218	381,136	2,089,544	215,501	537,641	72,075	793,051	58,618	1,691,663	81.0	397,881	284,196	91,150	352,001
	3 mos.	1,028	4,256,900	1,209,163	6,121,915	609,708	1,521,962	222,747	2,446,132	175,920	5,038,529	82.3	1,083,386	742,425	225,315	877,812
Chicago & Eastern Illinois	Mar.	946	1,365,118	221,001	1,747,011	238,837	393,460	84,687	721,837	70,752	1,509,267	86.4	237,744	116,796	—42,276	165,433
	3 mos.	946	4,147,908	728,907	5,327,400	693,558	1,243,762	250,912	2,263,810	215,324	4,687,352	88.0	640,048	277,670	—185,736	494,125
Chicago & Illinois Midland	Mar.	131	251,195	5,864	266,728	27,767	52,851	21,766	78,332	19,935	200,565	75.2	66,163	57,828	52,862	45,111
	3 mos.	131	710,504	21,054	760,834	92,620	172,919	60,327	244,468	55,314	625,335	82.2	135,499	110,494	89,390	148,507
Chicago & North Western	Mar.	8,458	7,544,696	1,520,334	10,224,550	1,289,090	2,321,536	210,142	4,302,645	306,212	8,458,924	82.7	1,765,626	989,927	770,172	1,220,696
	3 mos.	8,458	22,455,273	4,731,867	30,593,789	3,305,257	7,038,640	634,534	13,113,762	1,112,324	25,306,869	82.7	5,286,929	2,954,408	2,258,229	3,030,383

Revenues and Expenses of Railways

MONTH OF MARCH AND THREE MONTHS OF CALENDAR YEAR 1930—CONTINUED

Name of road		Av. mileage operated during period.	Operating revenues: Freight.	Passenger.	Total (inc. misc.)	Operating expenses: Maintenance of Way and structures.	Maintenance of Equipment.	Traffic.	Transportation.	General.	Total.	Operating ratio.	Net from railway operation.	Operating income (or loss).	Net ry. operating income.	Net ry. operating income, 1929.
Chicago, Burlington & Quincy	Mar.	9,337	$8,933,531	$1,138,758	$11,341,101	$1,098,728	$1,726,378	$296,443	$3,968,634	$378,465	$7,576,567	66.8	$3,764,534	$2,809,245	$2,555,104	$3,752,165
	3 mos.	9,356	26,780,932	3,735,847	34,016,864	2,893,492	5,118,473	943,660	12,355,803	1,132,424	22,837,160	67.1	11,179,704	8,256,584	7,524,138	10,399,753
Chicago Great Western	Mar.	1,495	1,532,115	163,984	1,849,069	181,513	277,560	81,100	760,762	55,372	1,362,661	73.7	486,408	402,308	236,637	191,724
	3 mos.	1,495	4,456,372	539,868	5,416,683	479,146	863,198	244,161	2,364,836	168,534	4,148,269	76.6	1,268,414	1,006,099	527,490	273,516
Chicago, Indianapolis & Louisville	Mar.	647	1,073,307	124,586	1,322,467	138,882	301,761	39,450	496,610	37,979	1,025,998	77.6	296,469	214,535	90,316	197,406
	3 mos.	647	3,130,747	387,089	3,877,861	392,222	847,939	117,345	1,507,590	112,504	3,010,990	77.6	866,871	630,381	253,257	433,050
Chicago, Mil., St. Paul & Pacific	Mar.	11,247	9,387,371	986,588	11,591,135	1,636,994	2,527,309	319,743	4,640,054	371,637	9,547,785	82.4	2,043,350	1,246,076	928,009	2,193,300
	3 mos.	11,247	27,485,548	3,151,463	34,053,809	3,952,902	7,500,169	945,641	14,127,621	1,174,147	27,851,282	81.8	6,202,527	3,813,968	2,758,830	5,046,370
Chicago River & Indiana	Mar.	20	.....	.....	535,433	53,000	51,800	1,411	197,774	17,935	321,920	60.1	213,513	173,115	241,738	313,831
	3 mos.	20	.....	.....	1,600,854	159,000	155,400	2,323	584,518	51,606	952,847	59.5	648,007	524,778	743,035	878,901
Chicago, Rock Island & Pacific	Mar.	7,592	7,838,312	1,290,852	10,141,118	1,100,583	1,866,531	233,585	3,868,536	328,490	7,492,463	73.9	2,648,655	2,109,233	1,695,927	1,537,481
	3 mos.	7,592	22,332,496	4,110,711	29,296,510	3,628,068	6,016,526	749,394	11,784,142	1,056,288	23,562,415	80.4	5,734,095	4,102,332	2,883,157	4,026,969
Chicago, Rock Island & Gulf	Mar.	566	460,207	61,840	570,112	70,655	61,896	21,893	201,352	23,103	380,694	66.8	189,418	174,651	149,669	211,555
	3 mos.	566	1,290,167	204,126	1,624,412	238,382	190,824	67,184	597,619	66,998	1,171,340	72.1	453,072	400,740	300,377	571,175
Chic., St. Paul, Minn. & Omaha	Mar.	1,746	1,608,710	256,670	2,019,099	217,990	415,238	42,014	887,002	84,653	1,658,545	82.1	360,554	250,753	146,673	199,186
	3 mos.	1,746	4,894,195	797,823	6,140,639	649,776	1,187,198	124,338	2,794,994	253,482	5,044,975	82.2	1,095,664	765,086	538,142	321,605
Clinchfield Railroad	Mar.	309	541,173	11,036	562,427	62,927	148,333	21,773	117,681	17,472	368,379	65.5	194,048	124,003	193,173	259,370
	3 mos.	309	1,580,249	34,024	1,643,966	176,752	416,415	64,989	349,145	53,506	1,061,206	64.6	582,760	372,685	625,025	824,448
Colorado & Southern	Mar.	1,040	729,502	59,431	866,863	127,898	183,862	15,539	312,993	43,447	683,786	78.9	183,077	113,024	86,258	113,925
	3 mos.	1,038	2,274,210	196,198	2,703,653	342,904	520,293	51,743	967,807	132,284	2,016,543	74.6	687,110	477,046	405,495	470,077
Ft. Worth & Denver City	Mar.	696	630,826	100,143	792,171	138,005	149,583	18,956	252,110	39,564	595,778	75.2	196,393	153,909	140,405	207,896
	3 mos.	696	1,893,058	345,598	2,416,831	351,186	514,465	57,989	806,618	118,128	1,849,489	76.5	567,342	440,131	403,398	791,263
Wichita Valley	Mar.	271	69,592	2,596	77,376	26,059	5,954	9	29,346	1,589	61,962	80.1	15,414	8,256	—12,369	19,933
	3 mos.	271	200,581	11,240	226,488	66,172	18,432	70	92,012	4,503	177,802	78.5	48,686	27,281	—27,082	88,598
Columbus & Greenville	Mar.	167	114,305	14,134	136,149	33,442	23,622	4,075	41,835	11,868	114,606	84.2	21,543	16,508	17,279	5,248
	3 mos.	167	369,444	48,408	444,157	84,814	64,720	12,469	154,557	36,793	352,922	79.5	91,235	73,418	65,483	27,666
Conemaugh & Black Lick	Mar.	20	69,293	.....	143,174	9,781	29,745	934	87,602	4,317	132,379	92.5	10,795	9,795	12,385	2,181
	3 mos.	20	192,022	.....	396,100	29,390	76,979	2,770	246,272	11,463	366,874	92.6	29,226	26,226	32,125	26,366
Delaware & Hudson	Mar.	881	2,513,496	191,562	2,924,086	428,996	767,433	57,864	1,162,424	166,838	2,589,333	88.6	334,753	211,696	208,421	335,854
	3 mos.	881	8,191,800	658,565	9,466,883	1,389,134	2,324,996	176,881	3,566,124	517,993	7,993,141	84.4	1,473,742	1,104,685	1,104,541	1,213,164
Delaware, Lackawanna & Western	Mar.	998	4,068,333	770,728	5,588,146	504,251	1,185,748	141,416	2,498,560	184,222	4,555,533	81.5	1,032,613	590,772	588,489	826,188
	3 mos.	998	12,578,463	2,475,251	17,116,106	1,640,419	3,537,137	424,896	7,464,088	541,319	13,723,545	80.2	3,392,561	2,010,454	2,023,781	3,335,100
Denver & Rio Grande Western	Mar.	2,561	1,884,900	179,119	2,229,148	202,603	508,618	59,748	718,556	92,845	1,588,968	71.3	640,180	464,540	494,568	615,862
	3 mos.	2,561	6,008,495	568,141	7,064,467	875,044	1,573,752	171,398	2,324,436	277,753	5,272,344	74.6	1,792,123	1,241,238	1,324,195	1,873,101
Denver & Salt Lake	Mar.	232	115,116	16,931	145,875	37,619	62,310	2,773	34,613	13,513	150,828	103.4	—4,953	—18,953	—8,775	50,906
	3 mos.	232	742,057	49,279	837,856	106,189	195,532	7,141	139,233	37,068	485,163	57.9	352,693	310,685	330,887	488,980
Detroit & Mackinac	Mar.	273	67,745	6,992	82,663	12,155	16,205	2,816	34,873	8,668	74,713	90.4	7,950	—1,557	—1,309	23,572
	3 mos.	273	180,664	25,959	228,989	44,431	58,798	7,127	105,781	21,641	237,739	103.8	—8,750	—37,271	—37,256	2,613
Detroit & Toledo Shore Line	Mar.	50	348,891	.....	354,851	17,851	35,965	8,376	90,112	8,802	161,105	45.4	193,746	148,747	78,764	178,009
	3 mos.	50	1,208,441	.....	1,222,948	72,746	105,201	23,064	296,506	25,588	523,104	42.8	699,844	586,409	347,000	475,552
Detroit Terminal	Mar.	19	.....	.....	131,965	11,269	13,111	.....	69,769	5,731	99,880	75.7	32,085	17,560	18,119	84,100
	3 mos.	19	.....	.....	409,915	36,840	43,228	.....	209,879	15,473	305,420	74.5	104,495	59,063	60,059	221,655
Detroit, Toledo & Ironton	Mar.	501	1,171,260	1,463	1,184,315	133,606	105,034	12,920	280,644	33,463	565,658	47.8	618,657	551,310	506,623	536,026
	3 mos.	507	3,220,004	5,252	3,259,764	371,957	300,792	39,522	830,380	103,798	1,646,435	50.5	1,613,329	1,411,560	1,287,733	1,474,201
Duluth, Missabe & Northern	Mar.	567	158,830	6,810	189,194	184,856	312,019	3,862	203,430	48,860	753,027	* 398.0	—563,833	—671,137	—665,890	—631,744
	3 mos.	567	474,375	22,120	567,668	482,072	921,789	12,874	631,586	139,641	2,187,955	385.4	—1,620,287	—1,956,790	—1,939,106	—1,857,429
Duluth, Winnipeg & Pacific	Mar.	178	169,118	9,923	184,756	26,603	42,767	5,375	74,662	7,733	160,055	86.6	24,701	15,413	9,589	57,618
	3 mos.	178	513,004	30,188	563,813	72,614	130,022	15,607	234,098	23,249	484,936	86.0	78,877	49,653	42,067	151,723
Elgin, Joliet & Eastern	Mar.	452	1,930,676	7	2,123,521	216,287	415,579	15,165	774,698	53,693	1,475,191	69.5	648,330	518,653	334,285	632,644
	3 mos.	453	5,503,051	26	6,040,968	591,194	1,189,356	46,017	2,305,038	161,295	4,292,044	71.0	1,748,924	1,381,997	819,321	1,223,682
Erie Railroad	Mar.	2,046	6,392,743	731,249	7,855,668	895,534	1,936,856	190,560	3,236,003	310,792	6,608,978	84.1	1,246,690	847,732	759,713	1,520,157
	3 mos.	2,046	19,418,685	2,254,536	23,720,602	2,463,678	5,805,065	558,481	9,791,134	921,410	19,648,669	82.8	4,071,933	2,873,858	2,662,215	4,289,957
Chicago & Erie	Mar.	269	1,055,432	51,572	1,202,227	120,082	144,393	31,434	362,243	45,048	702,922	58.5	499,305	441,067	172,949	376,351
	3 mos.	269	3,111,806	149,093	3,508,935	335,294	376,891	92,931	1,105,867	136,368	2,046,497	58.3	1,462,438	1,287,855	462,044	697,826
New Jersey & New York	Mar.	45	20,978	89,281	115,358	12,984	21,590	2,458	64,491	3,533	105,040	91.1	10,318	5,983	—23,629	—31,552
	3 mos.	45	65,807	269,672	349,348	37,739	72,921	5,575	196,293	11,028	323,519	92.6	25,829	12,783	—82,571	—81,116
N. Y., Susquehanna & Western	Mar.	131	283,576	38,056	369,899	46,025	46,124	5,086	175,657	12,920	285,751	77.3	84,148	52,592	25,817	54,040
	3 mos.	131	898,485	115,534	1,126,100	130,775	141,658	15,516	535,161	37,884	860,850	76.4	265,250	170,575	91,528	146,175
Evansville, Indianap. & Terre Haute	Mar.		Included in New York Central.													
	3 mos.		Included in New York Central.													

Revenues and Expenses of Railways

MONTH OF MARCH AND THREE MONTHS OF CALENDAR YEAR 1930—CONTINUED

Name of road		Av. mileage operated during period.	Operating revenues			Operating expenses					Operating ratio.	Net from railway operation.	Operating income (or loss).	Net ry. operating income.	Net ry. operating income, 1929.
			Freight.	Passenger.	Total (inc. misc.)	Maintenance of Way and structures.	Maintenance of Equipment.	Traffic.	Transportation.	General.	Total.					
Florida East Coast	Mar.	863	$738,457	$728,074	$1,707,197	$186,621	$194,980	$32,438	$409,448	$47,223	$915,013	53.6	$792,184	$658,529	$583,098	$874,181
	3 mos.	863	2,105,102	2,030,748	4,727,938	484,226	614,476	108,771	1,178,431	143,141	2,626,710	55.6	2,101,228	1,700,424	1,478,276	1,925,474
Fort Smith & Western	Mar.	249	103,318	6,597	116,484	22,062	23,863	5,667	41,935	6,335	99,062	85.0	17,422	12,698	—1,838	—3,256
	3 mos.	249	327,117	23,984	372,663	66,443	74,777	17,220	130,486	20,170	307,494	82.5	65,169	50,986	18,723	26,505
Galveston Wharf	Mar.	13	.....	.....	110,836	35,697	5,806	3,685	25,008	6,966	89,158	80.4	21,678	—3,322	—2,958	52,834
	3 mos.	13	.....	.....	379,879	114,287	16,808	11,552	81,565	18,091	281,986	74.2	97,893	22,893	23,550	197,263
Georgia R. R.	Mar.	328	351,448	43,748	426,775	46,299	84,608	22,060	182,991	22,857	357,952	83.9	68,823	60,224	72,122	86,015
	3 mos.	328	954,592	127,447	1,172,484	128,048	241,619	67,318	526,281	67,314	1,030,035	87.9	142,449	114,684	157,400	199,918
Georgia & Florida	Mar.	501	142,442	8,445	158,486	30,064	7,763	125,529	79.2	32,957	11,032	—45,232	—54,820			
	3 mos.	501	335,896	22,337	381,864	78,584	24,090	357,989	93.7	23,875	5,276	—172,402	—219,425			
Grand Trunk Western	Mar.	1,019	2,274,345	133,706	2,551,136	465,306	112,804	1,974,549	77.4	576,587	446,376	506,355	2,837,327			
	3 mos.	1,019	6,304,033	464,129	7,276,178	1,408,549	311,128	5,718,359	78.6	1,557,819	1,167,608	538,325	3,554,168			
Atlantic & St. Lawrence	Mar.	166	165,688	23,245	201,260	28,908	9,408	175,948	87.4	25,312	11,032	—45,232	—54,820			
	3 mos.	166	473,514	69,737	591,812	79,853	25,237	548,509	92.7	43,303	—157	—172,402	—219,425			
Great Northern	Mar.	8,366	5,941,994	744,190	7,461,180	1,099,197	249,763	6,163,547	82.6	1,297,633	580,354	506,355	2,837,327			
	3 mos.	8,367	15,905,418	2,396,016	20,422,836	2,706,125	723,545	17,613,072	86.2	2,809,764	821,269	538,325	3,554,168			
Green Bay & Western	Mar.	234	142,671	2,606	150,409	18,170	22,747	2,702	103,558	68.9	46,851	38,851	34,308	22,235		
	3 mos.	234	403,062	9,502	425,939	58,290	65,292	8,726	311,135	73.0	114,804	90,804	78,130	38,583		
Gulf & Ship Island	Mar.	307	250,849	39,491	338,686	49,149	53,017	6,951	237,780	70.2	100,906	68,721	49,917	19,048		
	3 mos.	307	630,502	104,775	832,209	142,027	145,090	21,675	648,785	78.0	183,424	87,009	48,618	19,960		
Gulf, Mobile & Northern	Mar.	733	518,742	24,131	565,756	85,653	94,546	31,536	175,117	26,890	414,074	73.19	151,682	115,805	84,056	119,630
	3 mos.	733	1,404,691	79,152	1,553,911	261,359	292,564	102,656	517,267	90,822	1,265,584	81.45	288,327	195,527	105,635	270,822
Hocking Valley	Mar.	348	1,113,253	33,903	1,212,917	176,035	323,543	20,057	351,233	48,762	919,861	75.8	293,056	168,119	125,478	340,490
	3 mos.	348	3,698,453	124,964	4,046,649	529,570	987,845	58,937	1,192,475	143,154	2,911,862	72.0	1,134,787	759,919	748,382	1,244,964
Illinois Central	Mar.	5,018	9,126,534	1,589,523	11,632,082	1,364,818	2,629,422	264,413	4,231,638	369,802	8,966,529	77.1	2,665,553	1,838,493	1,768,945	2,369,749
	3 mos.	5,018	26,297,966	5,110,292	33,917,372	4,012,834	7,813,565	844,704	12,883,790	1,090,167	26,918,185	79.4	6,999,187	4,631,943	4,525,028	6,957,060
Yazoo & Mississippi Valley	Mar.	1,705	1,831,463	259,652	2,222,279	290,599	387,025	45,953	858,993	65,530	1,653,262	74.4	569,017	401,709	298,719	67,337
	3 mos.	1,705	5,233,338	772,824	6,391,943	917,385	1,089,240	132,842	2,464,785	197,613	4,802,880	75.1	1,589,063	1,085,015	823,879	332,577
Illinois Central System	Mar.	6,724	10,971,608	1,853,138	13,871,936	1,655,417	3,020,355	310,366	5,100,016	435,442	10,633,194	76.7	3,238,742	2,243,541	2,071,003	2,438,447
	3 mos.	6,724	31,568,663	5,895,650	40,359,211	4,930,219	8,914,463	977,546	15,375,355	1,288,110	31,759,833	78.7	8,599,378	5,725,242	5,357,191	7,293,582
Illinois Terminal	Mar.	477	432,779	115,897	574,969	68,976	66,210	20,667	208,532	37,308	400,086	69.58	174,883	150,883	111,120	138,939
	3 mos.	477	1,264,300	343,909	1,681,572	180,085	226,112	53,889	642,175	103,235	1,201,536	71.45	480,036	408,036	277,858	317,719
Kansas City Southern	Mar.	784	1,261,153	71,293	1,470,945	146,947	257,291	62,755	433,703	83,651	988,835	67.2	482,110	368,326	297,766	260,368
	3 mos.	784	3,568,384	218,858	4,187,673	423,065	726,482	180,689	1,314,342	242,234	2,895,510	69.1	1,292,163	950,872	778,171	794,845
Texarkana & Ft. Smith	Mar.	99	181,593	6,161	208,295	47,143	28,619	10,168	57,292	10,393	155,913	74.9	52,382	36,715	10,451	90,670
	3 mos.	99	523,142	17,322	592,207	87,856	67,189	24,336	167,977	30,468	384,111	64.9	208,096	161,007	72,294	238,292
Kansas, Oklahoma & Gulf	Mar.	326	246,106	1,827	252,630	27,636	20,391	15,767	61,325	11,073	136,190	53.9	116,440	95,620	72,564	94,314
	3 mos.	326	780,894	7,182	802,508	63,227	68,739	47,123	198,145	31,614	408,466	50.9	394,042	331,336	264,136	280,768
Lake Superior & Ishpeming	Mar.	160	55,237	1,319	61,199	23,588	27,417	548	32,344	6,144	90,041	147.1	—28,842	—41,893	—45,527	—30,894
	3 mos.	160	170,438	4,295	187,645	66,510	83,000	1,691	100,354	18,679	270,234	144.0	—82,589	—121,374	—134,532	—110,657
Lake Terminal	Mar.	12	.....	.....	59,026	13,796	11,463	.....	33,203	1,950	60,412	102.3	—1,386	—7,811	—12,500	—5,087
	3 mos.	12	.....	.....	163,596	31,905	36,422	3,654	101,871	7,157	177,355	108.4	—13,759	—33,034	—43,960	—18,356
Lehigh & Hudson River	Mar.	96	169,516	925	181,694	19,805	35,007	10,663	69,055	10,231	137,752	75.8	43,942	32,710	16,979	21,766
	3 mos.	96	516,997	3,117	552,892	89,228	96,771		212,529	28,400	437,591	79.1	115,301	81,946	37,236	76,129
Lehigh & New England	Mar.	216	384,112	863	390,358	50,850	85,188	5,301	169,611	18,232	329,182	84.3	61,176	51,668	51,506	—15,904
	3 mos.	216	1,077,885	2,651	1,096,298	131,740	251,150	19,772	439,209	53,086	894,957	81.6	201,341	170,505	174,383	138,417
Lehigh Valley	Mar.	1,361	3,958,094	434,920	4,828,403	408,638	1,219,676	141,087	2,215,587	143,206	4,156,229	86.1	672,174	411,927	305,007	783,916
	3 mos.	1,361	12,457,259	1,375,328	15,021,015	1,037,852	3,590,729	423,730	6,744,203	454,336	12,336,733	82.1	2,684,282	1,852,001	1,547,217	2,248,606
Louisiana & Arkansas	Mar.	635	667,388	22,015	717,046	105,049	110,004	19,827	199,405	23,996	457,401	90.1	259,645	213,493	156,290	147,140
	3 mos.	635	1,722,586	62,382	1,857,061	258,612	330,426	61,804	564,613	70,807	1,286,064	85.0	570,997	434,837	296,928	267,181
Louisiana Ry. & Nav. Co. of Texas	Mar.	204	82,689	1,948	87,535	21,870	15,658	2,882	40,505	4,013	84,928	97.0	2,607	—1,412	—15,591	—42,094
	3 mos.	205	233,874	6,908	249,427	66,200	52,785	8,692	124,376	15,270	267,750	107.4	—18,323	—30,369	—73,298	—74,611
Louisville & Nashville	Mar.	5,250	7,778,323	1,042,576	9,486,524	1,636,680	2,614,799	213,166	3,655,565	382,100	8,547,718	90.1	938,806	501,804	522,808	1,108,975
	3 mos.	5,250	24,663,123	3,509,611	30,020,300	4,728,713	7,690,361	795,113	11,014,559	1,111,560	25,512,886	85.0	4,507,414	2,935,435	3,073,266	4,565,394
Maine Central	Mar.	1,121	1,380,831	216,806	1,716,979	207,867	646,995	17,244	1,255,982	51,217	1,255,982	73.2	460,997	368,118	318,652	237,474
	3 mos.	1,12	4,024,675	670,093	5,049,278	640,077	1,952,999	47,919	3,719,583	153,874	3,719,583	73.7	1,329,695	1,041,789	859,913	649,701
Midland Valley	Mar.	363	234,842	5,555	247,330	31,144	30,935	4,897	67,185	59.3	100,713	85,977	70,635	59,899		
	3 mos.	363	669,172	22,284	714,595	72,355	104,056	16,682	204,456	60.2	284,293	240,879	193,372	245,674		
Minneapolis & St. Louis	Mar.	1,627	847,586	51,711	959,860	117,342	229,395	37,374	491,568	95.9	39,206	—19,727	—69,520	70,378		
	3 mos.	1,627	2,560,413	162,019	2,904,130	328,969	683,040	115,154	1,508,481	95.3	135,591	—48,897	—189,360	130,388		

Revenues and Expenses of Railways

MONTH OF MARCH AND THREE MONTHS OF CALENDAR YEAR 1930—CONTINUED

Name of road		Av. mileage operated during period.	Operating revenues: Freight.	Passenger.	Total (inc. misc.)	Operating expenses: Maintenance of Way and structures.	Maintenance of Equipment.	Traffic.	Transportation.	General.	Total.	Operating ratio.	Net from railway operation.	Operating income (or loss).	Net ry. operating income.	Net ry. operating income, 1929.
Minneapolis, St. Paul & S. S. Marie	Mar.	4,411	$2,472,400	$240,617	$2,968,434	$440,349	$691,793	$80,493	$1,283,386	$127,853	$2,646,039	88.9	$328,395	$100,617	—$32,981	$283,137
	3 mos.	4,411	7,141,011	810,543	8,653,069	1,293,222	2,062,015	239,722	3,876,244	382,034	7,892,469	91.2	760,600	94,963	—307,450	369,818
Duluth, South Shore & Atlantic	Mar.	573	284,803	33,460	336,684	42,814	65,734	7,900	149,098	10,259	278,189	82.6	58,504	27,168	14,540	56,553
	3 mos.	573	847,802	118,210	1,021,237	130,246	201,553	24,818	464,493	31,897	859,786	84.2	161,451	68,114	27,037	75,822
Spokane International	Mar.	165	57,178	7,311	70,189	16,549	7,832	3,580	27,678	6,121	62,705	89.3	7,484	2,400	—2,849	14,210
	3 mos.	165	182,808	21,247	220,492	52,710	22,793	10,987	89,848	19,082	198,284	89.9	22,208	6,883	—7,665	38,791
Mississippi Central	Mar.	150	131,486	5,398	140,967	17,368	26,846	9,939	35,563	8,124	97,840	69.4	43,127	33,219	32,043	32,458
	3 mos.	150	343,604	16,083	372,050	51,734	77,715	30,456	105,160	25,792	290,857	78.2	81,193	58,823	59,619	85,485
Missouri & North Arkansas	Mar.	364	147,069	6,764	162,647	29,286	17,370	9,483	58,046	8,364	122,596	75.3	40,051	37,601	22,368	—6,016
	3 mos.	364	390,365	21,237	435,975	84,132	43,820	29,287	173,026	25,237	356,376	81.7	79,599	72,268	31,082	—15,507
Missouri-Illinois	Mar.	202	157,068	1,818	162,186	23,329	29,316	3,120	45,711	6,196	107,138	66.1	55,048	45,248	37,093	35,123
	3 mos.	202	431,250	6,514	448,264	55,925	103,532	10,817	139,471	19,490	328,583	73.3	119,681	95,281	75,488	89,365
Missouri-Kansas-Texas Lines	Mar.	3,188	3,004,609	420,097	3,765,871	596,270	690,884	117,428	1,215,557	173,550	2,715,941	72.1	1,049,930	807,832	576,912	975,194
	3 mos.	3,188	8,492,127	1,400,837	10,834,531	1,425,633	2,038,584	362,746	3,742,473	527,336	8,147,287	75.2	2,687,244	2,033,122	1,373,814	2,606,931
Missouri Pacific	Mar.	7,452	8,698,798	914,863	10,503,430	1,754,517	1,814,776	273,923	3,703,464	408,843	7,956,889	75.8	2,546,541	2,053,641	1,659,402	1,740,719
	3 mos.	7,452	25,006,217	2,977,315	30,549,743	4,041,043	5,328,543	927,454	11,405,934	1,182,188	22,924,861	75.0	7,624,882	6,212,286	4,959,956	5,193,292
Gulf Coast Lines	Mar.	1,026	1,383,157	156,170	1,630,151	221,909	231,924	48,444	419,337	64,418	980,541	60.15	649,610	600,095	463,183	380,798
	3 mos.	1,026	3,923,275	440,692	4,597,039	678,926	688,924	152,797	1,222,893	189,311	2,906,969	63.24	1,690,070	1,544,674	1,190,075	816,371
International-Great Northern	Mar.	1,159	1,016,537	141,730	1,308,383	213,480	246,960	47,326	554,863	70,603	1,140,823	87.19	167,560	123,529	8,249	141,393
	3 mos.	1,159	2,933,058	481,387	3,829,520	638,153	745,292	143,712	1,637,877	212,515	3,399,308	88.76	430,212	299,904	17,574	333,344
San Antonio, Uvalde & Gulf	Mar.	318	163,152	15,945	195,459	39,250	13,798	6,136	44,155	7,723	110,932	56.8	84,527	79,907	49,689	54,201
	3 mos.	318	382,663	48,460	471,723	124,750	45,426	19,273	108,796	23,563	318,857	67.6	152,866	138,700	58,197	68,151
Mobile & Ohio	Mar.	1,159	1,214,597	66,363	1,354,624	174,043	242,409	56,634	507,668	48,671	1,021,343	75.4	333,281	247,724	179,903	218,126
	3 mos.	1,159	3,254,315	217,225	3,682,308	523,547	701,553	174,808	1,455,973	154,610	3,000,213	81.5	682,095	423,610	256,223	437,098
Monongahela	Mar.	178	494,447	7,246	505,985	80,000	70,000	1,231	142,346	11,369	304,883	60.3	201,102	187,771	85,873	177,585
	3 mos.	178	1,560,634	23,253	1,596,596	240,000	210,000	3,771	443,586	32,920	928,731	58.2	667,865	619,713	311,879	529,327
Monongahela Connecting	Mar.	6	0	0	192,817	19,949	33,625	300	81,337	2,782	137,993	71.6	54,824	45,335	35,419	66,416
	3 mos.	6	0	0	535,583	59,951	99,866	927	245,768	8,546	415,058	77.5	120,525	95,452	70,423	127,573
Montour	Mar.	57	180,743	114	181,087	20,477	49,391	1,409	57,428	7,530	136,235	75.2	44,852	43,077	55,179	25,841
	3 mos.	57	542,301	150	543,422	51,633	158,378	4,265	159,952	22,304	396,532	73.0	146,890	141,565	180,126	157,057
Nashville, Chattanooga & St. Louis	Mar.	1,203	1,463,828	209,842	1,829,282	260,934	371,704	83,650	693,606	77,954	1,494,466	81.7	334,816	264,054	264,961	409,183
	3 mos.	1,203	3,964,540	670,879	5,098,050	699,788	1,088,881	273,646	1,961,149	243,816	4,297,904	84.3	800,146	606,162	610,625	1,039,156
Nevada Northern	Mar.	165	61,389	3,300	72,501	13,156	6,423	981	15,350	4,174	40,110	55.3	32,391	26,437	26,418	65,825
	3 mos.	165	184,704	11,483	218,821	35,748	19,515	3,110	46,877	12,938	118,438	54.1	100,383	73,752	73,293	168,062
Newburgh & South Shore	Mar.	6	0	0	125,171	15,389	29,883	0	61,120	5,970	112,362	89.8	12,809	—3,212	2,100	13,395
	3 mos.	6	0	0	329,013	37,403	91,299	0	170,293	18,751	317,746	96.6	11,267	—36,796	—28,016	42,210
New Orleans Great Northern	Mar.	276	254,927	14,473	276,550	29,335	50,878	10,394	86,244	12,358	189,209	68.4	87,341	72,202	41,438	47,242
	3 mos.	276	701,042	39,997	764,119	83,699	148,085	26,512	247,003	30,763	533,666	69.8	230,453	185,314	86,515	111,939
New Orleans Terminal	Mar.	20	2,846	0	151,614	18,337	10,790	0	57,317	1,768	88,212	58.2	63,402	52,144	46,053	56,836
	3 mos.	20	5,779	0	407,090	50,363	30,439	0	164,709	5,071	250,582	61.6	156,508	122,735	103,249	127,032
New York Central	Mar.	11,477	26,847,145	8,741,333	40,858,594	4,927,591	9,266,571	827,011	15,564,012	1,434,985	32,635,573	79.9	8,223,021	5,333,965	4,724,463	8,316,795
	3 mos.	11,477	80,543,723	28,088,230	123,328,434	14,096,705	28,345,062	2,455,083	46,834,146	4,257,551	98,108,709	79.6	25,219,725	16,499,794	14,446,110	22,646,197
Cincinnati Northern	Mar.		Included in New York Central.													
	3 mos.		Included in New York Central.													
Indiana Harbor Belt	Mar.	120	0	0	953,909	90,000	114,000	4,902	448,588	31,651	710,888	74.5	243,021	193,809	165,147	287,752
	3 mos.	120	0	0	2,788,301	270,000	342,000	15,117	1,307,559	85,882	2,075,187	74.4	713,114	562,320	506,415	645,367
Pittsburgh & Lake Erie	Mar.	231	2,168,070	166,553	2,421,314	245,813	733,639	34,704	799,199	81,289	1,905,562	78.7	515,752	353,351	581,139	591,262
	3 mos.	231	6,154,550	494,783	6,884,270	761,381	2,133,722	106,275	2,451,245	236,389	5,721,935	83.1	1,162,335	700,632	1,530,047	1,667,141
New York, Chicago & St. Louis	Mar.	1,690	3,820,763	155,296	4,124,530	547,742	781,814	138,378	1,572,057	136,448	3,168,405	76.8	956,125	834,383	604,409	1,120,373
	3 mos.	1,690	11,273,077	440,602	12,145,882	1,392,725	2,398,886	405,938	4,710,640	420,484	9,327,880	76.8	2,818,002	2,258,725	1,574,051	2,660,769
N. Y., New Haven & Hartford	Mar.	2,134	5,408,889	3,476,546	10,128,358	1,370,089	1,654,490	91,028	3,397,596	320,872	7,027,864	69.4	3,100,494	2,376,314	1,848,344	2,463,066
	3 mos.	2,133	15,642,852	10,706,602	29,810,120	3,544,217	4,916,470	299,039	10,119,357	985,707	20,457,738	68.6	9,352,382	7,288,047	5,635,324	6,244,136
New York Connecting	Mar.	20	202,454	0	232,815	15,042	12,841	0	40,395	2,795	71,073	30.5	161,742	123,742	95,364	124,800
	3 mos.	20	598,805	0	672,778	39,024	30,825	0	103,733	6,834	180,416	26.8	492,362	378,362	292,135	188,718
New York, Ontario & Western	Mar.	568	592,823	38,459	779,355	104,310	176,694	16,387	390,181	30,537	722,904	92.8	56,451	13,950	—25,501	—29,589
	3 mos.	568	1,919,928	126,189	2,465,921	285,539	531,942	52,497	1,210,848	103,261	2,204,246	89.4	261,675	134,048	15,534	—83,176
Norfolk & Western	Mar.	2,240	7,578,722	330,820	8,258,779	1,093,378	1,758,605	118,735	2,065,937	250,139	5,292,395	64.1	2,965,384	2,065,837	2,200,735	2,614,683
	3 mos.	2,240	24,164,625	1,060,923	26,167,845	3,307,394	5,238,211	371,643	6,417,391	757,996	16,164,497	61.8	10,003,348	7,301,880	7,948,889	8,614,074
Norfolk Southern	Mar.	932	574,470	21,473	624,505	77,615	97,635	29,085	239,998	28,590	472,366	75.6	152,139	99,364	83,083	139,772
	3 mos.	932	1,528,784	65,838	1,700,998	239,511	273,951	86,382	701,165	84,856	1,383,392	81.3	317,606	159,387	119,409	244,977

Revenues and Expenses of Railways

MONTH OF MARCH AND THREE MONTHS OF CALENDAR YEAR 1930—CONTINUED

Name of road		Av. mileage operated during period.	Operating revenues: Freight.	Passenger.	Total (inc. misc.)	Operating expenses: Maintenance of Way and structures.	Maintenance of Equipment.	Traffic.	Transportation.	General.	Total.	Operating ratio.	Net from railway operation.	Operating income (or loss).	Net ry. operating income.	Net ry. operating income, 1929.
Northern Pacific	Mar.	6,783	$5,408,405	$585,928	$6,625,496	$919,344	$1,537,488	$215,349	$2,482,215	$260,609	$5,515,794	83.3	$1,109,702	$434,992	$758,185	$1,858,341
	3 mos.	6,783	14,325,241	1,781,171	17,937,987	2,078,358	4,550,451	625,524	7,456,415	779,200	15,786,422	88.0	2,151,565	140,393	1,126,856	3,365,674
Northwestern Pacific	Mar.	474	244,125	119,769	406,807	112,388	92,811	6,348	211,043	18,629	440,529	108.3	—33,722	—70,127	—73,821	—28,567
	3 mos.	476	698,725	335,671	1,146,667	310,421	297,943	21,967	602,425	50,788	1,282,247	111.8	—135,580	—244,871	—254,386	—214,051
Pennsylvania R. R.	Mar.	10,511	34,053,349	9,587,577	48,622,382	5,864,218	10,121,834	923,810	18,291,883	1,676,094	37,509,842	77.1	11,112,540	8,146,678	7,136,220	10,877,660
	3 mos.	10,511	98,675,450	29,617,102	142,061,595	17,289,839	29,969,415	2,766,591	$4,771,335	5,191,080	111,901,447	78.8	30,160,148	22,768,020	19,406,721	27,521,482
Long Island	Mar.	404	863,219	1,937,968	2,958,720	446,561	463,631	38,463	1,319,549	63,576	2,332,082	78.8	626,638	501,962	360,645	477,557
	3 mos.	404	2,444,989	5,748,560	8,654,907	1,207,072	1,395,225	80,039	3,963,673	210,663	6,857,690	79.2	1,797,217	1,468,321	1,047,588	1,308,191
West Jersey & Seashore	Mar.	369	384,362	232,152	650,334	96,029	92,476	4,045	319,298	15,744	530,232	81.5	120,102	82,250	57,900	137,638
	3 mos.	369	1,095,986	716,680	1,909,066	262,056	276,028	12,365	956,802	47,526	1,563,126	81.9	345,940	292,215	218,301	326,363
Peoria & Pekin Union	Mar.	19	17,129	804	150,574	17,313	15,866	4,952	64,692	9,448	112,271	74.6	38,303	21,303	40,624	40,480
	3 mos.	19	46,744	3,554	437,298	46,374	44,892	15,591	202,028	25,837	334,722	76.5	102,576	51,247	101,095	129,582
Pere Marquette	Mar.	2,241	2,958,982	163,912	3,310,506	458,916	708,661	69,753	1,252,966	119,168	2,619,676	79.1	690,830	620,900	442,259	1,018,508
	3 mos.	2,241	8,510,747	556,886	9,587,602	1,342,481	2,199,832	226,933	3,680,944	353,041	7,824,629	81.6	1,762,973	1,415,127	963,769	2,481,618
Pittsburgh & Shawmut	Mar.	102	103,550	6,970	111,829	14,183	25,512	1,835	33,536	7,018	82,084	73.4	29,745	28,412	29,822	40,850
	3 mos.	102	310,103	15,094	328,386	42,766	79,061	5,209	100,313	21,226	248,575	75.7	79,811	75,914	83,925	144,109
Pittsburgh & West Virginia	Mar.	92	246,323	3,192	278,975	26,478	76,794	19,269	61,373	18,033	211,514	75.8	67,461	40,790	76,005	203,429
	3 mos.	92	809,228	9,434	906,285	70,198	225,075	58,974	186,510	56,053	625,955	69.1	280,330	200,265	316,845	653,370
Pittsburgh, Shawmut & Northern	Mar.	198	136,754	1,293	141,931	19,490	27,484	1,952	47,728	7,148	103,802	73.1	38,129	35,324	27,611	25,933
	3 mos.	198	408,257	3,674	422,773	59,132	80,654	5,407	143,336	19,536	308,065	72.8	114,708	106,192	86,151	97,081
Quincy, Omaha & Kansas City	Mar.	249	42,922	6,017	55,569	15,054	4,753	760	26,029	2,465	48,894	88.0	6,675	1,986	—487	—11,399
	3 mos.	249	113,030	20,407	151,068	46,211	15,894	2,542	75,616	8,288	148,074	98.0	2,994	—11,083	—17,809	—25,901
Reading	Mar.	1,462	6,409,780	526,571	7,431,557	1,110,771	1,885,681	96,391	2,913,658	223,317	6,256,655	84.2	1,174,902	887,143	914,513	1,281,309
	3 mos.	1,460	19,489,954	1,674,875	22,456,070	3,270,971	5,684,316	286,118	8,802,103	671,178	18,789,844	83.7	3,666,226	2,807,302	2,831,839	4,003,560
Atlantic City	Mar.	163	117,314	65,679	200,947	91,427	20,184	2,580	156,931	6,507	277,687	138.2	—76,740	—116,740	—129,950	—114,707
	3 mos.	163	345,259	194,829	589,927	227,360	61,905	9,754	473,100	16,417	788,949	133.7	—199,022	—319,022	—363,837	—373,811
Rich., Fredericksburg & Potomac	Mar.	117	512,754	416,645	1,169,279	149,885	189,652	10,011	381,115	34,362	803,430	68.7	365,849	306,575	230,033	335,749
	3 mos.	117	1,374,776	1,181,805	3,152,899	322,780	546,258	31,862	1,080,076	112,591	2,188,514	69.4	964,385	798,101	581,175	834,831
Rutland	Mar.	413	273,394	89,739	454,330	80,480	98,887	11,572	190,805	17,165	400,603	88.2	53,727	33,174	41,823	58,634
	3 mos.	413	759,585	258,457	1,296,504	237,269	299,427	35,167	553,034	51,572	1,180,542	91.1	115,962	59,855	86,180	133,477
St. Louis-San Francisco	Mar.	5,314	4,960,903	704,846	6,275,748	805,495	1,202,791	120,983	2,206,505	234,998	4,543,913	72.4	1,751,835	1,334,678	1,318,049	1,532,920
	3 mos.	5,314	14,407,657	2,326,434	18,254,553	2,155,888	3,554,728	382,290	6,648,588	702,152	13,370,514	73.2	4,884,039	3,943,727	3,970,097	4,378,259
Ft. Worth & Rio Grande	Mar.	233	49,927	4,337	63,758	20,500	15,711	3,013	40,079	4,337	83,161	130.4	—19,405	—23,868	—32,269	—13,292
	3 mos.	233	165,103	14,704	207,198	58,176	45,618	9,240	120,200	13,596	246,107	118.9	—38,909	—52,599	—76,595	—19,104
St. Louis-San Francisco & Texas	Mar.	154	113,873	9,400	127,605	17,848	22,113	5,794	54,127	8,434	108,255	84.8	19,350	16,375	—11,473	—6,741
	3 mos.	154	336,491	30,295	382,440	56,283	63,650	17,155	161,194	23,924	322,387	84.3	60,053	50,652	—31,449	—6,396
St. Louis Southwestern	Mar.	1,816	1,960,054	71,480	2,181,045	292,540	315,155	104,684	711,049	88,292	1,530,066	70.2	650,979	532,144	412,198	253,375
	3 mos.	1,816	5,148,966	246,825	5,814,723	890,242	1,010,539	329,537	2,067,102	295,156	4,647,457	79.9	1,167,266	907,870	563,966	692,019
St. Louis Southwestern of Texas	Mar.		Included in St. Louis Southwestern.													
	3 mos.		Included in St. Louis Southwestern.													
San Diego & Arizona	Mar.	156	72,776	27,691	101,970	17,316	16,866	3,934	28,614	8,648	76,658	75.2	25,312	19,945	21,113	35,953
	3 mos.	156	228,193	79,090	311,985	48,966	50,519	12,641	84,777	25,220	226,206	72.5	85,779	69,660	71,699	91,709
Seaboard Air Line	Mar.	4,506	3,913,478	661,816	5,117,152	708,571	839,064	210,935	1,842,801	186,832	3,875,134	75.7	1,242,018	889,915	726,370	1,201,765
	3 mos.	4,503	10,887,659	2,403,841	14,777,791	1,952,951	2,432,572	635,884	5,253,335	539,851	11,004,167	74.5	3,773,624	2,743,894	2,361,233	3,011,153
Southern Ry.	Mar.	6,731	8,294,886	1,511,275	10,704,797	1,720,399	2,108,007	248,217	3,834,877	381,270	8,376,211	78.2	2,328,586	1,538,051	1,394,347	2,185,126
	3 mos.	6,731	23,891,552	4,739,379	31,211,204	5,123,397	6,221,373	729,582	11,303,897	1,122,168	24,742,698	79.3	6,468,506	4,167,165	3,735,790	6,237,598
Alabama Great Southern	Mar.	314	615,084	100,878	770,615	129,507	150,926	19,938	226,246	24,983	557,637	72.4	212,978	156,682	171,908	266,288
	3 mos.	314	1,684,837	316,234	2,152,140	392,701	495,458	61,428	684,382	73,616	1,725,839	80.2	426,301	276,477	308,990	566,555
Cinn., New Orleans & Tex. Pacific	Mar.	338	1,421,221	207,081	1,728,280	279,165	357,983	38,657	501,160	53,973	1,246,334	72.1	481,946	380,397	384,935	—730,778
	3 mos.	338	4,006,434	697,016	4,983,319	856,487	1,081,344	119,597	1,483,054	161,090	3,745,312	75.2	1,238,007	966,152	979,681	8,233
Georgia Southern & Florida	Mar.	397	234,560	111,945	380,470	68,167	79,462	2,967	135,504	3,156	298,650	78.5	81,820	53,561	43,527	25,565
	3 mos.	397	662,221	347,971	1,102,248	204,896	219,198	6,313	390,793	8,724	856,175	77.7	246,073	172,844	160,581	61,375
New Orleans & Northeastern	Mar.	204	320,764	57,196	403,455	63,164	73,606	10,898	129,534	14,239	294,879	73.1	108,576	62,115	23,591	123,305
	3 mos.	204	917,565	164,377	1,155,402	186,414	210,197	33,894	377,197	42,004	860,238	74.5	295,164	162,793	41,371	240,724
Northern Alabama	Mar.	110	90,189	4,143	97,263	23,809	3,547	2,586	31,153	2,979	64,074	65.9	33,194	27,660	7,492	6,970
	3 mos.	110	268,032	12,737	289,024	72,252	10,717	6,907	92,884	8,887	191,647	66.3	97,377	80,293	21,403	49,919
Southern Pacific	Mar.	9,120	11,748,059	3,071,395	16,208,924	2,257,924	3,049,299	456,766	5,368,223	669,949	12,077,234	74.5	4,131,410	2,798,571	2,338,722	3,787,681
	3 mos.	9,123	32,979,602	9,079,897	45,957,952	6,005,415	8,952,620	1,295,498	15,942,699	2,001,258	34,974,027	76.1	10,983,925	7,098,847	6,149,817	9,301,607
So. Pacific Steamship Lines	Mar.	....	594,715	47,653	692,091	20,152	173,311	23,689	493,081	38,096	748,329	108.1	—56,238	—57,776	—51,620	49,455
	3 mos	....	1,773,356	121,082	2,033,723	57,087	528,300	69,509	1,429,590	157,456	2,240,942	110.2	—207,219	—211,448	—200,563	38,920

Revenues and Expenses of Railways

MONTH OF MARCH AND THREE MONTHS OF CALENDAR YEAR 1930—CONTINUED

Name of road		Av. mileage operated during period.	Operating revenues: Freight.	Passenger.	Total (inc. misc.)	Operating expenses: Maintenance of Way and structures.	Maintenance of Equipment.	Traffic.	Transportation.	General.	Total.	Operating ratio.	Net from railway operation.	Operating income (or loss).	Net ry. operating income.	Net ry. operating income, 1929.
Texas & New Orleans	Mar.	4,721	$4,139,068	$775,890	$5,361,517	$961,083	$1,057,960	$180,176	$1,813,998	$256,859	$4,291,889	80.0	$1,069,628	$751,974	$477,229	$.,081,136
	3 mos.	4,721	12,053,915	2,379,911	15,697,747	2,820,489	3,211,695	522,615	5,416,773	788,009	12,792,806	81.5	2,904,941	1,980,910	1,175,362	2,163,278
Spokane, Portland & Seattle	Mar.	554	569,466	69,846	699,615	104,393	112,641	10,884	218,997	23,585	476,261	68.1	223,354	136,233	131,571	165,833
	3 mos.	554	1,473,013	207,252	1,854,966	231,340	311,106	34,292	660,849	69,757	1,324,110	71.4	530,850	269,497	232,973	455,047
Tennessee Central	Mar.	296	229,204	10,403	254,713	69,767	47,236	8,267	96,505	14,266	235,449	92.4	19,264	13,695	—2,016	10,036
	3 mos.	296	664,546	31,167	738,074	169,026	147,917	27,274	280,566	42,523	665,998	90.2	72,076	55,846	7,946	56,610
Terminal R. R. Assn. of St. Louis	Mar.	55	.....	.....	937,847	158,059	103,261	3,185	432,563	26,100	726,452	77.5	211,395	120,147	205,411	339,191
	3 mos.	55	.....	.....	2,679,885	411,031	297,938	9,065	1,296,626	87,541	2,112,744	78.8	567,141	348,802	618,328	916,918
Texas & Pacific	Mar.	1,955	2,730,954	407,327	3,388,222	436,556	556,048	86,814	1,066,121	128,527	2,262,208	66.8	1,126,014	940,595	761,860	900,803
	3 mos.	1,955	7,723,788	1,224,858	9,640,910	1,439,922	1,675,294	263,478	3,231,952	381,916	6,993,354	72.5	2,647,556	2,091,115	1,497,828	1,939,501
Texas Mexican	Mar.	162	81,729	2,948	97,311	14,155	17,342	3,661	38,242	8,525	78,729	80.9	18,582	13,582	6,300	4,628
	3 mos.	162	220,136	9,333	266,260	46,304	49,467	11,878	116,594	22,627	243,178	91.3	23,082	8,061	—14,841	—299
Toledo, Peoria & Western	Mar.	239	176,282	307	181,406	14,072	31,019	16,521	67,061	8,860	137,515	75.8	43,891	36,379	24,655	35,672
	3 mos.	239	477,647	984	489,506	57,515	87,725	43,456	212,373	26,621	427,672	87.4	61,834	51,049	20,588	130,804
Toledo Terminal	Mar.	23	.....	.....	107,558	6,869	18,958	549	50,417	4,328	81,090	75.4	26,468	10,968	36,493	79,669
	3 mos.	28	.....	.....	321,877	16,954	53,462	1,744	144,924	14,202	231,239	71.8	90,638	44,138	124,129	194,633
Trinity & Brazos Valley	Mar.	367	121,829	4,511	134,166	133,577	31,815	6,383	73,182	13,040	250,855	187.0	—116,689	—124,800	—149,624	—28,573
	3 mos.	367	418,588	16,145	459,544	327,285	110,092	19,070	220,891	37,831	697,337	151.7	—237,793	—261,936	—342,071	—59,724
Ulster & Delaware	Mar.	128	23,276	2,021	62,586	12,731	13,314	1,224	34,353	4,060	65,682	104.9	—3,096	—7,296	—8,244	—5,967
	3 mos.	128	63,949	6,610	170,677	35,077	41,185	3,595	101,087	12,211	193,155	113.2	—22,478	—33,278	—35,844	—37,597
Union R. R. of Penna.	Mar.	45	.....	.....	671,733	93,564	151,599	145	324,860	13,996	584,050	86.9	87,683	50,383	90,185	191,064
	3 mos.	45	.....	.....	1,928,908	211,187	466,400	467	966,974	44,086	1,688,834	87.6	240,074	129,574	286,218	419,432
Union Pacific	Mar.	3,765	6,025,917	940,193	7,703,009	898,932	1,871,870	175,755	2,374,018	330,007	5,777,950	75.0	1,925,059	1,233,075	1,108,604	1,960,393
	3 mos.	3,765	17,508,019	2,751,688	22,370,834	1,958,172	5,339,390	499,312	7,251,231	1,000,443	16,446,258	73.5	5,924,576	3,805,954	3,468,254	6,036,326
Oregon Short Line	Mar.	2,538	2,226,989	231,450	2,650,763	393,416	469,115	54,294	805,784	125,038	1,882,856	71.0	767,907	483,503	397,811	589,859
	3 mos.	2,538	6,624,738	724,177	7,898,821	934,232	1,384,070	155,290	2,512,925	374,857	5,471,624	69.3	2,427,197	1,539,186	1,286,078	2,123,946
Oregon-Wash. R. R. & Nav.	Mar.	2,364	1,611,263	174,006	1,977,157	431,085	316,065	69,827	758,163	124,196	1,714,302	86.7	262,855	73,797	—11,198	—46,370
	3 mos.	2,364	4,662,543	555,112	5,779,323	952,005	937,329	216,875	2,415,471	372,592	4,964,864	85.9	814,459	238,518	—30,583	—44,275
Los Angeles & Salt Lake	Mar.	1,229	1,481,536	278,231	1,933,178	311,062	337,393	100,411	624,271	82,973	1,517,972	78.5	415,206	247,433	132,354	419,342
	3 mos.	1,229	4,436,101	839,530	5,778,844	889,213	1,004,733	243,349	1,898,949	250,486	4,476,630	77.5	1,302,214	791,395	430,856	1,010,053
St. Joseph & Grand Island	Mar.	258	269,751	7,180	288,832	49,339	35,801	3,371	96,493	15,643	204,622	70.8	84,210	65,975	46,107	68,329
	3 mos.	258	808,178	23,366	863,355	98,628	103,781	10,268	296,061	47,572	562,470	65.1	300,885	240,049	184,034	216,342
Utah	Mar.	111	108,108	.....	108,340	20,335	36,445	324	27,835	5,765	90,704	83.7	17,636	11,060	—1,687	45,623
	3 mos	111	525,460	.....	529,299	68,850	120,416	1,050	133,518	19,089	342,923	64.8	186,376	149,709	88,182	222,577
Virginian	Mar.	545	1,227,546	25,422	1,347,688	163,751	280,660	13,505	308,386	32,188	799,536	59.3	548,152	403,151	467,114	619,461
	3 mos.	545	4,413,285	80,236	4,759,974	478,019	871,055	41,731	971,062	95,322	2,461,282	51.7	2,298,692	1,791,691	2,010,672	2,213,363
Wabash	Mar	2,523	4,860,255	454,269	5,650,722	639,811	1,025,250	194,519	2,276,504	227,451	4,385,288	77.6	1,265,434	1,064,556	680,194	1,220,658
	3 mos.	2,523	13,602,606	1,461,548	16,128,462	1,607,298	2,931,304	584,576	6,800,164	729,251	12,718,278	78.9	3,410,184	2,724,202	1,616,313	3,217,463
Ann Arbor	Mar.	293	415,155	10,214	436,386	30,583	96,954	13,637	181,157	10,921	333,270	76.4	103,116	75,957	46,620	117,239
	3 mos.	293	1,193,730	35,336	1,263,799	99,396	266,230	42,586	544,097	35,120	987,137	78.1	276,662	197,159	106,235	270,987
Western Maryland	Mar.	896	1,480,094	16,224	1,550,116	219,080	281,850	42,967	418,945	43,742	1,012,816	65.3	537,300	447,300	470,326	480,431
	3 mos.	893	4,389,866	55,684	4,593,679	606,086	877,145	128,151	1,272,034	130,465	3,026,888	65.9	1,566,791	1,306,791	1,390,287	1,302,330
Western Pacific	Mar.	1,051	1,027,576	79,676	1,186,563	334,660	270,315	68,656	460,371	51,824	1,208,140	101.8	—21,577	—123,632	—55,816	191,557
	3 mos.	1,051	2,898,955	193,004	3,287,671	762,795	806,905	201,686	1,366,498	145,898	3,347,559	101.8	—59,888	—365,960	—214,719	394,427
Wheeling & Lake Erie	Mar.	511	1,334,121	16,944	1,424,395	154,010	374,983	40,304	428,047	43,963	1,042,540	73.2	381,855	253,802	278,315	362,973
	3 mos.	511	3,775,366	54,196	4,046,486	397,076	1,073,305	115,373	1,269,533	138,412	2,997,501	74.1	1,048,985	677,000	708,941	1,045,991
Wichita Falls & Southern	Mar.	203	80,435	490	85,197	14,174	11,071	2,835	26,168	3,833	58,081	68.17	27,116	21,932	17,128	23,318
	3 mos.	203	217,694	1,694	232,027	42,179	32,325	8,827	80,898	15,612	179,841	77.51	52,186	36,310	19,862	53,996

News of the Week

(Continued from page 1145)

Officers elected for the ensuing year were: President, L. R. Wink, assistant superintendent of the car department, Chicago & North Western; first vice-president, C. T. Ripley, chief mechanical engineer, Atchison, Topeka & Santa Fe; and second vice-president, O. E. Ward, superintendent of motive power, Chicago, Burlington & Quincy, Chicago. J. W. Fogg of the MacLean-Fogg Lock Nut Company, Chicago, was re-elected treasurer and W. J. Dickinson of the Duntley-Dickinson Supply Company, Chicago, secretary. The board of directors includes: C. Bucholtz, general manager, Erie, Youngstown, Ohio; B. J. Farr, general superintendent of motive power and car department, Grand Trunk Western, Battle Creek, Mich.; J. T. Gillick, vice-president, Chicago, Milwaukee, St. Paul & Pacific, Chicago; H. P. Allstrand, principal assistant superintendent of motive power and machinery, Chicago & North Western, Chicago; C. M. House, superintendent of motive power and equipment, Chicago & Alton, Bloomington, Ill.; A. W. Turner, master mechanic, Michigan Central, Niles, Mich.; J. H. Nash, Chicago; J. H. Reisse, mechanical assistant to the vice-president, Chicago, Burlington & Quincy, Chicago; L. A. Richardson, general superintendent of motive power, Chicago, Rock Island & Pacific, Chicago; C. J. Wymer, superintendent of car department, Chicago & Eastern Illinois, Danville, Ill.; J. E. Bjorkholm, assistant superintendent of motive power, Chicago, Milwaukee, St. Paul & Pacific, Milwaukee, Wis.; and F. F. McCarthy, division superintendent of motive power, New York Central, Elkhart, Ind.

Revenues and Expenses for March

Class I railroads in the first three months of 1930 had a net railway operating income of $176,253,624, which was at the annual rate of return of 3.56 per cent on their property investment, according to reports compiled by the Bureau of Railway Economics. In the first three months of 1929 their net was $259,323,783, or 5.35 per cent. Operating revenues for the three months totaled $1,331,982,486, a reduction of 10.1 per cent. Operating expenses for the first three months of the year amounted to $1,038,418,491, a reduction of 5.4 per cent. Taxes amounted to $88,372,893, compared with $95,577,394 for the same period the year before. For March alone, the tax bill of the Class I railroads amounted to $30,145,797, a decrease of $2,473,608 under the previous year.

Thirty-four Class I railroads operated at a loss in the first three months of 1930, of which 11 were in the Eastern district, two in the Southern and 21 in the Western.

Net railway operating income by districts for the first three months of 1930 with the percentage of return based on property investment on an annual basis was as follows:

New England Region	$10,863,503	5.54%
Great Lakes Region	31,369,881	3.74%
Central Eastern Region	38,209,217	3.86%
Pocahontas Region	18,432,802	8.11%
Total Eastern District	98,875,403	4.39%
Total Southern District	25,017,531	2.89%
Northwestern Region	6,262,418	1.50%
Central Western Region	30,018,285	3.31%
Southwestern Region	16,079,987	3.18%
Total Western District	52,360,690	2.86%
United States	$176,253,624	3.56%

Class I railroads for March had a net railway operating income of $61,074,229, which, for that month, was at the rate of 3.06 per cent on property investment. In March, 1929, the net was $97,404,523, or 4.98 per cent. Operating revenues for the month amounted to $452,716,556, a decrease of 12.5 per cent. Operating expenses totaled $351,278,765, a decrease of 7 per cent.

Roads in the Eastern district for the first three months had a net of $98,875,403, which was at the rate of 4.39 per cent. For the same period in 1929, their net was $136,242,288, or 6.19 per cent. Operating revenues for the three months totaled $672,402,828, a decrease of 9.3 per cent, while operating expenses totaled $519,160,679, a decrease of 5.2 per cent. Class I railroads in the Eastern district for March had a net of $32,653,245, compared with $50,319,686 in March, 1929.

Roads in the Southern district for three months had a net of $25,017,531, at the rate of 2.89 per cent. For the same period of 1929, their net amounted to $34,770,776, at the rate of 4.08 per cent. Operating revenues for the first three months amounted to $178,730,239, a decrease of 9.6 per cent, while operating expenses totaled $139,172,711, a decrease of 5.6 per cent. The net railway operating income of the Class I railroads in the Southern district in March amounted to $9,308,727, while in the same month in 1929 it was $12,051,408.

In the Western district for the three months the net railway operating income was $52,360,690, at the rate of 2.86 per cent. For the first three months in 1929, the railroads in that district had a net of $88,310,719, at the rate of 4.93 per cent. Operating revenues for the three months amounted to $480,849,419, a decrease of 11.4 per cent, while operating expenses totaled $380,085,101, a decrease of 5.7 per cent. For March, the net of the Class I railroads in the Western district amounted to $19,112,257. The net of the same roads in March, 1929, totaled $35,033,429.

CLASS I RAILROADS—UNITED STATES

	Month of March 1930	1929
Total operating revenues	$452,716,556	$517,563,319
Total operating expenses	351,278,765	377,757,681
Taxes	30,145,797	32,619,405
Net railway operating income	61,074,229	97,404,523
Operating ratio—per cent	77.59	72.99
Rate of return on property investment	3.06%	4.98%
	Three months ended March 31	
Total operating revenues	1,331,982,486	1,481,224,504
Total operating expenses	1,038,418,491	1,098,060,343
Taxes	88,372,893	95,577,394
Net railway operating income	176,253,624	259,323,783
Operating ratio—per cent	77.96	74.13
Rate of return on property investment	3.06%	4.98%

Traffic

The Chicago & Eastern Illinois has equipped the La Salle, its 6½-hr. train between Chicago and St. Louis, with new cars; a club-lounge car, an individual seat chair car, an observation parlor car, a dining car and coaches.

The Public Service Commission of New York has completed its long series of hearings on the general increases in freight rates which have been proposed by the railroads, and which were protested by various business interests, and has notified parties to file briefs by July 1. These hearings have taken testimony of 250 witnesses and there are 6000 pages in the record.

An adverse report on the project for a canal to connect New York Bay with the Delaware River at a cost estimated at about $100,000,000 was submitted to the House rivers and harbors committee on May 5 by the Board of Engineers for Rivers and Harbors with the concurrence of Maj. Gen. Lytle Brown, chief of engineers. The board agreed with an earlier report of the district engineer that the expenditure is not at present justified.

The Northern Pacific, on May 15, will re-equip its North Coast Limited, which operates between Chicago and the northwest Pacific Coast. The new equipment for the seven units, or trains, which comprise the North Coast Limited service involves an investment of about $4,000,000. One train will make an exhibition tour over the entire system, preliminary to May 15. The features of the new cars include roller bearings, controlled ventilation, vapor heat, brass framed and rubber-cushioned windows, dining cars seating 36 passengers and observation cars with radio, soda fountain and shower baths.

The Traffic Club of St. Louis has elected the following officers for the ensuing year: President, Edward Clemens, traffic manager of the Terminal Railroad Association of St. Louis; vice-presidents, T. M. Mulderig, traffic manager of the Evans & Howard Fire Brick Company; William J. Siegel, commercial agent of the Central of Georgia; Alex M. Field, traffic manager of the Wrought Iron Range Company; J. R. Hundley, division freight agent of the Wabash, and R. R. Feickert, traffic manager of the Lammert Furniture Company; secretary, Sherman E. Wilson, traffic manager of the Chevrolet Motor-Fisher Body Company; and treasurer, A. H. Killinger, purchasing and traffic manager of the Lacledé-Christy Clay Products Company.

Latest in Detours

The Atchison, Topeka & Santa Fe, on June 1, will establish a three-hour motor detour through the Rainbow Petrified Forests of Arizona, thereby making it possible for eastbound passengers to detrain at Winslow in the morning, ride 70

miles in Harvey coaches through the forests and rejoin the train at Holbrook. A similar arrangement will prevail on westbound train No. 9. Passengers in all the coaches, as well as in sleeping cars, have their seats reserved during their absence from the train.

Railroad Farm Lectures in Ontario

The Department of Agriculture of the Province of Ontario, Canada, has lately completed a traveling lecture course covering 1,200 miles, the journey being carried out by means of a three-car train, operated in association with the Canadian National and the Canadian Pacific Railways. The train started at Pickering on February 18, and in the course of eight weeks visited 57 centers in 18 counties. This was called the "Soils and Crops Train" and the lectures were listened to by 20,000 persons, including 7,000 school children.

Low-Price Sunday Excursions to Cleveland and Toledo

The Pennsylvania announces that on Saturday, May 17, it will run all-coach excursion trains, with buffet food service, from New York to Cleveland, Ohio, and to Detroit, Mich. The fare from New York and cities near New York will be, round trip, to Cleveland, $12, and to Toledo and Detroit, $14. The Cleveland train will leave New York at 3:25 p.m.; arrive in Cleveland 7:25 a.m. on the eighteenth; return 7:20 p.m., May 18. Detroit train will leave New York at 1:20 p.m.; arrive Toledo 6:35 a.m. and Detroit 8 a.m.; returning leave Detroit 4:40 p.m. May 18, and Toledo 6:05 p.m.

New Perishable Freight Route from California

The Western Pacific, the Union Pacific and the Chicago, Burlington & Quincy have established a new route for perishable freight from California to Chicago which will provide seventh morning instead of eighth morning arrival in Chicago. Freight will move from California over the Western Pacific to Salt Lake City, Utah, thence by way of the Union Pacific to Sidney, Neb., and over the Burlington thence to Chicago. Formerly this freight moved by way of the Western Pacific to Salt Lake City, thence by way of the Denver & Rio Grande Western to Denver, Colo., and over the Burlington to Chicago.

Farmers to Tour Pacific Northwest

Over 3,000 farmers of the Middle West and East will tour the Pacific Northwest during the summer months on 12 separate tours sponsored by farm publications and the railways. These tours were initiated by the Great Northern two years ago, and this year are being sponsored by farm publications. The 24 trains will be handled by the various railroads from the several states in which the traffic originates to St. Paul, Minn., where they will be turned over to the Great Northern for movement to Seattle, Wash., and Portland, Ore. The return trips will be by way of various routes, most of which will be over the Canadian National through Canada. The itinerary includes Glacier National Park, Spokane, the apple country around Wenatchee, Portland, the lumber mills at Longview, Tacoma, Seattle, Vancouver, B. C., and Winnipeg, Man. The tours will begin after harvest time in the various states.

Long Island Replies to N. Y. Transit Commission

Responding to the question of the New York Transit Commission whether or not it will comply with the recent order of the commission requiring the purchase of 100 new passenger cars and the establishment of increased train service, the Long Island Railroad answers in the negative; and an application will be filed for a rehearing. J. F. Patterson, general manager, in a statement issued in connection with the company's reply to the commission, said that the real difficulty with which the order attempts to deal is the failure of the city of New York to provide adequate transportation within the city, which it should do in order to leave the Long Island free to devote its energies to the long distance traffic. The Public Service Commission of New York recognizes the soundness of this position when it says: "In some of the rapidly growing parts of Queens and Kings Counties, due to lack of ample rapid transit facilities, the public has turned necessarily to the Long Island for transportation and in so doing, has caused conditions of over-crowding on trains that cannot be readily relieved, nor will such over-crowding be completely relieved until more rapid transit facilities are provided either through construction by the City of New York or extension of facilities by the Long Island Railroad. There are very few places outside of the City where the Long Island fails to provide what may be considered sufficient service."

The provision of 15-car trains, as called for by the commission, would be merely to temporize with a condition which requires constructive action of a fundamental character, the statement adds.

Galveston Rate Case Taken to Court

A hearing on the application of interested parties to have the Interstate Commerce Commission's order in the Galveston rate case set aside on the grounds that the commission discriminated against Louisiana in favor of Texas was held by a special federal court at New Orleans, La., on May 2 and 3. Judge Rufus E. Foster for the appellate body, Judge W. I. Grubb of the Alabama district and Judge J. C. Hutchison of Texas presided in the case.

When the rate order was originally issued by the Commerce Commission prescribing lower rates on commodities from Kansas, Oklahoma and Texas, to Texas ports than to the port of New Orleans, the Texas & Pacific and the Louisiana Railway & Navigation company (now the Louisiana & Arkansas) sought exception from the order, since they did not enter Galveston, Houston or other Texas ports. In 1927 the Interstate Commerce Commission entered an order in which the Texas & Pacific and the Louisiana & Arkansas roads were excepted from the order; however, in 1929, the I. C. C. reconsidered and placed the two roads involved within the purview of the order.

The commodities on which lower rates are allowed in shipments to Texas ports than to the port of New Orleans include: Grain and grain products, asphalt, bagging, cotton-bale ties and buckles, green coffee, cotton factory products and related products, cotton seed and peanut cake, meal and oils, packing houses products, soap and turpentine.

On the first day, attorneys for the Texas & Pacific, the Louisiana & Arkansas, the New Orleans Joint Traffic Bureau and others presented testimony substantiating their contentions that Louisiana had been discriminated against. On the second day, representatives of the government testified in support of the commission's decision.

Central Claim Conference at Kansas City

The ninth of a series of educational courses prepared by the Committee on Freight Claim Prevention of the Freight Claim Division of the American Railway Association, and conducted under auspices of the Freight Claim Conferences, will be held at Kansas City, Mo., on May 13 and 14, under the sponsorship of the Central Claim Conference. The subjects to be considered include Fundamental Principles of Good Packing Practices, and Methods of Stowing and Bracing Machinery and Allied Products, by Edward Dahill, chief engineer of the Freight Container Bureau, New York; What the Transportation Inspector Can do to Reduce Loss and Damage, by T. B. Hunt, chief clerk in the over, short and damage department of the Atchison, Topeka & Santa Fe, Topeka, Kan.; Destination Inspection of Fruits, Melons and Vegetables, Common Plant Diseases, Proper Loading, Stowing, Recoopering and Damage Reports, by Walter B. Jensen, manager, perishable inspection, Merchants Despatch, Inc., Rochester, N. Y.; Best Practices in Packing, Stowing, Stripping and Bracing of Fruits, Melons and Vegetables; How to Determine and Report Damage Causes at Destination by A. J. Lorion, engineer, Freight Container Bureau, American Railway Association, New York; How Boxes and Interior Packing are Designed in the Laboratory of the Box Manufacturer, and Lessons Learned from Laboratory Research, by G. R. Watkins, chief packing engineer of the Chicago Mill and Lumber Company, Chicago; The Use of Impact Registers, by V. L. Landon, secretary of the Chicago Terminals committee of the General Managers Association, Chicago; Proper and Improper Methods of Packing and Crating

or Boxing Furniture, Radios, Gas and Electric Ranges; Trucking, Stowing and Unpacking Suggestions and The Principal Causes of Damage, by A. P. Kivlin, engineer of the Freight Container Bureau of the American Railway Association, New York; Rough Handling Studies, by Walter Bohnstengel, assistant engineer of tests of the Atchison, Topeka & Santa Fe; Selection and Preparation of Cars for Grain and Flour Loading; Proper Loading of Flour and Principal Causes of Damage and How to Salvage Damaged Flour for Best Results, by O. W. Galloway, of the traffic department of the Pillsbury Flour Mills Company, Minneapolis, Minn.; Semi-Rigidity in the Bracing of Heavy Freight and Automobile Loading, by E. S. Evans, president of the Evans Auto Loading Co., Inc., Detroit, Mich.; Packing and Bracing Methods that have Proved Satisfactory for Machinery and Similar Freight and The Chief Causes of Damage, by R. H. Ewry, packing and loading specifications engineer of the Commonwealth Edison Company, Chicago; Good Form of Car Bracing and Suggested Practices for Carton Loading, by C. L. Jellinghaus, superintendent property protection of the New York Central, New York; and Some Conditions that Contribute to Rough Handling, by Joe Marshall, special representative of the Freight Claim division, American Railway Association, Chicago.

GHOLSON & COMPANY, contractors for the Texas & Pacific, have applied to the Railroad Commission of Texas for permission to drill oil wells on the railroad's right-of-way which traverses oil fields in Ector county. If drilling is permitted and proves successful, the railroad may produce its own fuel oil. The Chicago, Rock Island & Gulf has also applied to the commission for a permit to drill wells upon its right-of-way in Young county.

* * *

The "Frontenac" of the Canadian Pacific

Foreign Railways

Estonian Railways in 1928-1929

During the fiscal year ending March 31, 1929, Estonian railways carried a total of 8,475,000 passengers and handled 2,110,000 metric tons of freight, according to reports received by the Department of Commerce. These figures compare with 6,094,000 passengers carried and 2,084,000 metric tons of freight handled in 1927-1928. Total revenues for the fiscal year 1928-1929 were 16,076,269 Estonian crowns ($4,179,830), an increase of 2,225,343 crowns ($578,589) over revenues for the preceding fiscal year. Expenses during 1928-1929 totaled 12,322,399 crowns ($3,203,824), leaving an operating profit of 3,753,870 crowns ($976,006), equivalent to approximately 3.6 per cent on the total value of the railways, which is estimated at 103,585,000 crowns ($26,932,100). The total mileage of the Estonian systems on March 31, 1929, was 1,878 kilometers (1,126 miles), of which 1,120 kilometers were broad gage and 758 kilometers narrow gage.

Great Western to Extend South Wales Docks

The Great Western of Great Britain has recently received the approval of the British government for plans involving an expenditure of £3,000,000 (nearly $15,000,000) for further improvements to its dock system in the southern part of Wales. The proposed work includes an additional lock entrance to the Swansea docks, extension of piers at Port Talbot, and improvement of cranes and substitution of appliance for handling freight cars up to 20 tons' capacity at Newport, Cardiff, Barry and Penarth.

The present South Wales dock system of the G. W. R. has a total water area of 1,300 acres; 174,000 ft. of wharfage; 158 coal-loading cranes, 50 of which are already capable of handling 20-ton cars; 389 wharfside cranes; 102 transit sheds, with a total area of 3,200,000 sq. ft.; 37 drydocks, and 500 miles of sidings. The various ports at which the docks in the system are located are capable of handling annually over 50,000,000 tons of general freight, including coal, coke, grain, flour, fruit, fish, vegetables, dairy produce, live cattle, sheep and pigs, and frozen meats. Actual traffic through the docks totaled 35,000,000 tons in 1928 and 38,500,000 tons in 1929, the increase being primarily due to larger coal shipments.

Remote Control for Steam Locomotives

A new type of train, the locomotive of which remains at the same end regardless of the direction in which the train is operated, pulling the cars on one trip and pushing them on the return, has made its appearance in Paris, (France), according to a report received in the Department of Commerce. At the present time this train is in use between the North station in Paris and Le Bourget flying field. When the locomotive is pushing the train from the rear, the engineman is located at a specially provided control station at what is then the front end of the train and from which he controls the train in much the same manner as the motorman of an electrically operated train. From this point he can control the brakes throughout the train and likewise operate the throttle, cut off and reversing gear of the locomotive at the rear end of the train. At the same time he is in constant touch with his fireman by means of a telephonic installation equipped with loud speakers.

The train is made up of nine all-steel cars each 65 ft. 7 in. long. Electric welding has been used wherever possible in the construction of the cars to afford them resistance to shock and torsion. The welding has also eliminated all rivet heads and mouldings from exterior surfaces. The cars are equipped with automatic couplers and vestibule diaphragms, the couplings being maintained in a state of tension by heavy springs acting against the opposing bellows plates.

Entrance and exit to each car is made through two wide doors located on each side and at some distance from the end of the car. The usual compartment separations have been eliminated, the only partitions being those forming transverse vestibules between each pair of oppositely located doors. There is a center aisle with one large central compartment and two smaller compartments at the ends of the cars. Inside and outside doors are all of the sliding type, the latter being operated by compressed air.

British Railway Dividends

Dividend payments made by the four British railway companies on outstanding stock for the year 1929, representing in every case an increase over disbursements made on the same shares in 1928, are as follows: Great Western, 7½ per cent on deferred common stock (compared with 5 per cent on the same stock in 1928); London, Midland & Scottish, 4½ per cent on preferred common stock (compared with 3½ per cent in 1928); London & North Eastern, 3 per cent (compared with ¼ per cent in 1928), and Southern, 2½ per cent (compared with 2 per cent in 1928). The largest proportional increase, made by the L. N. E., was largely the result of increased revenues, while operating economies resulting in larger net incomes were the chief factors in the increases declared by the Southern and Midland systems. Approximately half of the Great Western's 2½ per cent increase was also due to reduced outlay.

Despite increased earnings and dividends for 1929, stock prices have not risen accordingly, so that shares of all four companies can be bought to yield between 8.24 per cent (for the Southern)

and 8.95 per cent (for the L. M. S.), according to figures compiled by the London Bureau of the Wall Street Journal. Fears of increased operating costs, decreased traffic and more intensive highway competition during 1930 are the reasons assigned for these high yields. Fuel costs seem likely to rise during the year, while the 2½ per cent reduction in wages accepted voluntarily by the railway employees in August, 1928, expires on May 12, with the roads pledged to make no change in working conditions before November. This latter item alone, with no corresponding economies, will mean an increased cost in the remainder of the year to the L. M. S. of £726,012; to the North Eastern of £547,672; to the Great Western of £315,353, and to the Southern of £200,000. Even after allowing for this increase in wages and for a 5 per cent decline in revenue, with no additional compensating operating economies, however, the Wall Street Journal (London Bureau) estimates that the roads could still earn, in 1930, dividends which would produce yields of from 3.9 per cent (Southern) to 7.4 per cent (Great Western), on present market prices of stock.

South Australian Railways in 1928-29

A deficit equivalent to $6,819,800, after interest charges, was reported by the South Australian Railways for the year ending June 30, 1929, thus bringing the cumulative deficit of these government lines to a figure equivalent to $147,571,900. Operations during 1928-29 resulted in a net loss of $163,400 as against a 1927-1928 net revenue of $1,323,800. Because of this latter's contribution to interest charges of that year the 1927-28 deficit amounted to but $4,869,300.

Gross revenues during the past year were $17,623,200 and operating expenses $17,786,600 as against 1927-28 revenues of $19,478,000 and expenses of $18,154,200. The past year was one of the three fiscal periods since 1919-20 for which these lines reported a deficit from operations. The others were 1925-26, when the operating ratio was 167 and the operating deficit $13,837,100, and 1926-27 when the respective figures were 142 and $8,511,900. During 1928-29 with the previously-mentioned operating deficit of $163,400 the operating ratio was approximately 101.

The decline of $1,854,800 in revenue for 1928-29 as compared with 1927-28 is accounted for mainly by the drop of $1,272,000 in freight revenues. There were, however, accompanying declines of $664,100 in passenger train revenues and $46,900 in miscellaneous earnings. The only increase was in receipts from bookstall and refreshment rooms; this increase amounted to $128,400.

In freight service, as compared with the previous year, there was in 1928-29 a decline of 656,453 long tons in the amount of freight handled; the number of passengers carried at the same time fell from 20,880,751 to 17,885,515. Revenues per train mile rose from a 1927-28 figure of $2.95 to $3.01 in 1928-29 but expenses increased more rapidly, the figures being respectively $2.75 and $3.04. Thus there was a net of 20 cents per train mile in 1927-28 as against a three-cent loss in 1928-29.

The report devotes considerable space to the effect of highway competition on railway revenues and in this connection discusses the highway services operated by the railways. In these latter services during 1928-29 a total of 55,569 passengers were carried and 13,216 long tons of freight hauled. "Action has been taken," the report continues, "to co-operate with motor truck owners in country districts to facilitate the carriage of freight to and from local railway stations and it is intended to extend our operations in this direction.

Along the same line is the discussion of rail motor car operations. Figures on these reveal that during the past year 1,900,700 passengers were carried in rail motor cars 29,811,676 passenger miles. Averages on connection with this service were: Passengers per car mile, 23; average journey per passenger, 16 miles; motor miles per gallon of fuel, 3.69; miles per hour, 21.58; cost per train mile, 32 cents. The report lists 32 rail motor cars and 19 trailers as owned by the railways.

Soviet Opens 1,100-Mile Line in Central Asia

Completion of the greatest industrial undertaking yet accomplished in Soviet Russia was marked on April 20 by the linking of the rails of the north and south sections of the Turkestan-Siberian railroad at Almaata, former capital of Kazakstan. The new line, which was formerly opened on May 1, is approximately 1,800 kilometers (1,100 miles) long and connects Semipalatinsk, in Siberia, with Tashkent, the chief city of central Asia. It has been under construction, with work progressing from both ends, for several years, and despite difficulties in the shape of floods, food and material shortages, half-hearted co-operation from technicians, tropical heat and intense cold, is the first major Soviet enterprise to be carried through below the estimated cost and in less than the scheduled time.

Not only does the new road permit the exchange of Asiatic cotton and Siberian grain, leaving the cotton growers of central Asia free to cultivate that crop without the necessity of also growing their food supply, but it provides for the first time modern transportation for large areas rich in natural resources. It traverses an area of great mineral wealth in the Altai mountains, crossed by its northern section, while the central section passes Lake Balkash and the southern part opens up the rich agricultural territory in central Asia. About 27,000,000 acres of virgin timberland are made accessible by the new line, while it also possesses considerable strategic importance, due to the fact that it borders the frontier between Asiatic Russia and Chinese Turkestan.

Equipment and Supplies

Locomotives

THE ALTON & SOUTHERN is inquiring for one or two ten-wheel switching locomotives.

THE WEIRTON STEEL COMPANY has ordered one eight-wheel switching locomotive from the American Locomotive Company.

THE BALTIMORE & OHIO has ordered two 4-8-2 type locomotives and two Mallet (2-6-6-2) type locomotives from the Baldwin Locomotive Works.

THE ALIQUIPPA & SOUTHERN has ordered two eight-wheel switching locomotives from the American Locomotive Company. Inquiry for this equipment was reported in the *Railway Age* of January 11.

Freight Cars

THE UNITED STATES NAVY DEPARTMENT is inquiring for four tank cars for transporting helium gas.

THE OLIVER IRON MINING COMPANY has ordered 10 air dump cars of 30 cu. yd. capacity from the Magor Car Corporation.

THE CARNEGIE REFINING COMPANY has ordered three tank cars of 6,000 gal. capacity with three compartments each, from the General American Tank Car Corporation.

THE CHICAGO, MILWAUKEE, ST. PAUL & PACIFIC has ordered 500 stock cars from the General American Car Company. Inquiry for this equipment was reported in the *Railway Age* of January 11.

THE WARRIOR RIVER TERMINAL, New Orleans, La., has ordered 62 gondola cars of 70 tons' capacity from the Pullman Car & Manufacturing Corporation. Inquiry for this equipment was reported in the *Railway Age* of April 19.

Passenger Cars

THE BOSTON & MAINE is inquiring for four dining cars for use on its limited trains.

THE READING has ordered 10 steel baggage cars 70 ft. long from the American Car & Foundry Company. Inquiry for this equipment was reported in the *Railway Age* of April 12.

Iron and Steel

THE ST. LOUIS-SAN FRANCISCO is inquiring for 800 tons of structural steel for bridges in Arkansas and Oklahoma.

THE CHICAGO & NORTH WESTERN is inquiring for 3,600 tons of structural steel for miscellaneous bridge work in 1930, and 450 tons for its express terminal at Chicago.

Supply Trade

The International Derrick & Equipment Company, Columbus, Ohio, has moved its New York City office from 74 Trinity place to 90 West street. **A. L. Worack** is district manager.

H. L. Miller, formerly chief engineer of the Buda Company, Harvey, Ill., has been appointed manager of the electric railway division of the **Pettibone-Mulliken Company,** Chicago.

The Tuco Products Corporation has moved its Chicago office from the Railway Exchange building to the Peoples Gas building, 122 South Michigan avenue.

The Globe Steel Tubes Company has moved its eastern district sales office to the Lincoln building, 60 East Forty-second street, New York City. **Paul C. Lewis,** formerly with the Alloy Steel Products Company, Boston, Mass., is now associated with the sales department of the Globe Steel Tubes Company at its New York office.

W. Earle Pashley, advertising manager of the **C. F. Pease Company,** Chicago, has been promoted to second vice-president and assistant sales manager and has been succeeded by **C. D. McCormick,** assistant advertising manager.

The Electric Railweld Sales Corporation, Chicago, has expanded its welding activities in the railroad field to include repairs and the reinforcement of steel bridges. A special department has been organized to handle this branch of the work under the direction of **George W. Hettrick,** whose headquarters are in Chicago.

Vaughan Tie Tamper Patent Upheld—Judge Hugh Morris of the United States District Court of Delaware, in an opinion handed down April 23, decided the suit of Fanny Minton Vaughan and Ingersoll-Rand Company vs. Gardner-Denver Company, for infringement of the Vaughan tie tamper patent No. 1147660, in favor of the plaintiffs. Ingersoll-Rand Company is the principal licensee under the patent. It is understood that no appeal from the decision will be made.

The Phoenix Manufacturing Company, Joliet, Ill., has purchased the steel tank, water treating and steel plate construction business and the plant at East Chicago of the Graver Corporation, East Chicago, and will operate this plant and business under a wholly owned subsidiary company—**The Graver Tank & Manufacturing Corporation,** East Chicago. The officers of the new company are: **Edward N. Gosselin,** president; **F. C. Everitt,** vice-president and general manager; **P. S. Graver,** vice-president in charge of sales; **W. F. Graver,** vice-president: **H. S. Graver,** vice-president, and **R. E. Meyer,** secretary and treasurer.

Cutler-Hammer, Inc., Milwaukee, Wis., has purchased the assets of the **Union Electric Manufacturing Co.,** Milwaukee, manufacturers of motor control apparatus. The branch sales offices and warehouse stocks of the latter company have been consolidated with the Cutler-Hammer branch offices and warehouses, while the present factory of the Union Company is being operated as a manufacturing division of Cutler-Hammer. **E. F. LeNoir,** president of Union, has become associated with the headquarters sales staff of Cutler-Hammer. Most of the Union personnel, particularly those in the sales and engineering departments, have been taken into the Cutler-Hammer organization.

Engineering Departments of Edison Lamp Works and National Lamp Works Combine

Nela Park, Cleveland, is now the headquarters of the Edison Lamp Works, the National Lamp Works, and the entire incandescent lamp department of the General Electric Company. The geographic locations of the two lamp sales organizations made difficult the closest co-operation and concentration of engineering development work, but with the recent move of the Edison Lamp Works to Nela Park, the engineering departments of Edison and National have consolidated.

Headed by Ward Harrison as director, the new engineering department is in a favorable position to carry on development work in illumination. Railway lighting will be handled by A. L. Broe and H. H. Helmbright.

A. L. Broe was born in New York City on July 15, 1887. He was graduated from Columbia University with the degree of E. E. in 1910 and in September of the same year entered the employ of the General Electric Company, in whose employ he has since remained.

A. L. Broe

H. H. Helmbright was born at Wheeling, W. Va. He was educated in the public schools of that city and also in Case School of Applied Science, Cleveland, Ohio. For a part of 1918 Mr. Helmbright was in the United States Army. On October 20, 1919, he entered the employ of the National Lamp Works of the General Electric Company. Both Mr. Broe and Mr. Helmbright bear the title of railroad specialist, and during their long experience in the field of railroad lighting they have become familiar with the many kinds of illumination problems with which the railroads are confronted.

H. H. Helmbright

Obituary

William C. Reitz, vice-president and treasurer of the Pittsburgh Steel Company, Pittsburgh, Pa., who was one of the organizers of that company, died on May 4, at the age of 74.

George Deeks, president of the Dominion Construction Company, died at Toronto, Ont., on May 1, at the age of 72 years. Mr. Deeks' activities as a contractor began in the United States where he constructed portions of the Michigan Central and the Illinois Central. In recent years he had confined his operations almost exclusively to Canada where he constructed several hundred miles of branch lines for the Canadian National and the Canadian Pacific. He also participated in the construction of the Hudson Bay Railway.

Trade Publication

WOOD PRESERVATION. — The Curtin-Howe Corporation, New York, is distributing a folder which lists the advantages of the ZMA method of preserving wood, and also names the companies licensed to use this preservative.

A UNIQUE CLOCK, which simultaneously tells the time all over the world, has been installed at one of its stations by the London (England) Underground Electric Railway Company. The clock is in the form of a map of the world on Mercator's projection, with a narrow band marked with the hours of day and night traveling continuously from east to west along the line of the equator.

Construction

ATCHISON, TOPEKA & SANTA FE.—A contract has been awarded to the Roberts & Schaefer Company, Chicago, for the construction of coal, sand and water facilities at Las Vegas, N. M. The facilities will be arranged so that a locomotive may be supplied with all three materials at one time.

BESSEMER & LAKE ERIE.—This company has authorized the replacement of existing steel bridges Nos. 2 and 3 at Butler, Pa., by heavier steel bridges designed for Cooper's E-75 loading, at an estimated cost of $51,500; the replacement of present timber trestles Nos. 73 and 75 at Conneautville, Pa., by permanent steel and concrete bridges also designed for Cooper's E-75 loading, at a cost of approximately $30,050, and the construction of a 32-ft. by 114 ft. brick and steel sanitary building and the extension of a 12-in. steam heat main at its Greenville, Pa., shops at a probable cost of $51,100.

CANADIAN PACIFIC.—This company plans the reconstruction of the roof of the old portion of the Empress hotel at Victoria, B. C., to place it in a fireproof state, at a cost of about $600,000.

CANADIAN PACIFIC.—Contracts have been awarded for the construction of 145 miles of branch lines in Saskatchewan and Alberta. The new lines and the contractors for each are as follows: From Dunelm, Sask., southwest 25 miles along the valley of Swift Current creek, to Stewart & Grant, Winnipeg, Man.; the Debben-Meadow Lake portion of the Prince Albert and Lac LaBiche line in Saskatchewan, 90 miles, to Hett & Sibbald, Ltd., Prince Albert, Sask., and the Tomlinson Construction Company, Winnipeg; from Crossfield, Alta., southwest a distance of 30 miles, to W. A. Dutton, Winnipeg.

CANADIAN PACIFIC (Kettle Valley).—This company plans the expenditure of about $950,000 for the repair and replacement of 22 bridges on the Carmi and Princeton subdivision in British Columbia. The program includes the construction of a steel bridge at Mileage 87.4 between Myra, B. C., and Ruth, to replace an existing timber trestle 750 ft. long; the construction of a steel bridge 285 ft. long at Mileage 50, near Carmi, B. C.; the construction of a steel bridge 450 ft. long at Mileage 86, near Ruth, B. C., and the reconstruction of a timber trestle at Mileage 95, near Lorna, B. C.

CANADIAN PACIFIC.—In addition to projects reported in previous issues of the *Railway Age*, this company's improvement program on its eastern lines for 1930 includes the following projects: Construction of reinforced concrete coaling plants of 300 and 150 tons capacity, respectively, at Glen Yard, Montreal, Que., and Chalk River, Ont., and of a steel coaling tower at Cote St. Paul, Montreal; construction of new stations at Edmundston, N. B., Ottawa West, Ont., Waldemar and Durham; completion of a new station now under construction at Wakefield, Que.; improvements to passenger stations at some five or six other points on eastern lines; installation of new turntables at Port McNicoll, Ont., Ingersoll and Cataract; new water tanks of 40,000 or 60,000 gal. capacity at Ingersoll, Ont., Grand Valley, Bonfield and Sault Ste. Marie; new sidings or extensions of existing sidings at some ten points on lines in Quebec, Ontario, and Vermont, and installations of automatic color light signals between Bedell, Ont., and Glen Tay, 36.3 miles, between Agincourt, Ont., and Don, 10.8 miles, between London, Ont. and Lobo, and between Lanoraie, Que., and Berthier Junction, 8.3 miles.

ERIE.—The New York Public Service Commission has approved an estimate of cost totaling $98,000, exclusive of land and damages, for the reconstruction of the bridge carrying the Kuders Corners-Springwater highway over this company's tracks at Conesus, N. Y.

ERIE-LEHIGH VALLEY-DELAWARE, LACKAWANNA & WESTERN.—The Ludwig avenue crossing of these railroads in Cheektowaga, N. Y., has been added to the New York Public Service Commission's program for grade crossing elimination in 1930. The cost of this elimination is estimated at approximately $300,000.

ERIE-NEW YORK, CHICAGO & ST. LOUIS.—Plans have been prepared by the Buffalo Produce Exchange for the construction of a produce terminal and farmers' market adjacent to the tracks of these railroads at Clinton street and Bailey avenue, Buffalo, N. Y. Plans for the new market, which will cover approximately 15 acres, provide for 50 stores for produce dealers, a cold storage plant, a garage and warehouse, a bank, and an enclosed winter market. A delivery yard open to all railroads with a capacity of 350 cars and storage facilities for an additional 800 cars will also be provided adjoining the market. It is expected that contracts for actual construction of the various units of the terminal will be awarded in the near future.

LEHIGH VALLEY.—The Public Service Commission of New York has directed the elimination of the Seneca turnpike crossing of this company's tracks, one-half mile south of Canastota, N. Y., by carrying the highway under the railroad on its present line. The cost is estimated at $159,000.

NEW YORK CENTRAL.—The Public Service Commission of New York has approved an estimate of cost amounting to $285,700, without land or damages, for the elimination of the Genesee street crossing of this company's tracks near Bowmansville, N. Y.

NEW YORK CENTRAL.—Contracts have recently been awarded by this company as follows: To Skinner & Cook Company, New York, for the construction of a signal station at Park Ave. and 134th street, New York; to M. & B. Rosen Company, New York, for the demolition of buildings on Spring and Washington streets and between Forty-second and Forty-third streets and Tenth and Eleventh avenues, New York; to W. F. Crane & Company, New York, for the installation of piping in car shops at Harmon, N. Y.; to Edward J. Duffy Company, Inc., New York, for the restoration of the West Forty-second street passenger terminal, New York; to the P. T. Cox Contracting Company, Inc., New York, for the elimination of a grade crossing at 158th street, New York; to N. D. Peters & Company, Inc., Utica, N. Y., for the reconstruction of bridge U-16 at Marcy, N. Y.; and to the Walsh Construction Company, Syracuse, N. Y., for the elimination of grade crossings at Pittsford, N. Y., and at Clark street, Auburn, N. Y. The Public Service Commission of New York has directed the elimination during 1930 of the following grade crossings on this company's lines: Gouverneur-De Kalb state highway and Hayes crossings north of DeKalb Junction, N. Y., by closing the existing crossings and diverting traffic to a new highway overhead crossing 925 ft. east of the present state highway crossing at an estimated cost of $115,000; of the Allegany street crossing, Corfu, N. Y., at an estimated cost of $200,000, and of the Dean crossing, Amawalk, N. Y., by diverting traffic to a new highway undercrossing 600 ft. southwest of the present crossing, at an estimated cost of $157,000. The commission has also approved an estimate of cost totaling $650,300, exclusive of land and damages, for the elimination of the Thompson road crossing of the New York Central in Syracuse, N. Y.

NEW YORK, CHICAGO & ST. LOUIS.—A contract for the construction of a three-track reinforced concrete coaling station of 250-ton capacity at Claypool, Ind., has been let to the Roberts & Schaefer Company, Chicago.

NEW YORK, WESTCHESTER & BOSTON.—A plan for an industrial warehouse center to be constructed at this company's Westchester avenue terminal, White Plains, N. Y., has been announced by Leverett S. Miller, president. The plan calls for the construction of two groups of warehouses in the present freight yards, the larger group located parallel to the passenger station of the N. Y., W. & B., with a group of smaller warehouses adjacent to Paulding street. All warehouses would be served on one side by the railroad tracks and on the other by existing streets or by newly constructed driveways. The plan also includes the construction of team tracks.

OZARK & PHILPOTT VALLEY.—Examiner O. D. Weed of the Interstate Commerce Commission has recommended in a pro-

posed report that the commission grant this company's application for authority to build a line of seven miles in Franklin county, Ark., east of Ozark.

PACIFIC GREAT EASTERN.—Bids will be received until May 15 for the grading for the construction of 5.2 miles of railway at Lillooet, B. C., which will provide a line into the city. The present main line is about a mile from the town. The tenders requested also provide for the grading for a new yard. The project includes the construction of a steel bridge over the Fraser river, with a total estimated expenditure of about $500,000.

PENNSYLVANIA.—A contract has been awarded to the George A. Fuller Company, Philadelphia, Pa., for the construction of new locomotive facilities in the Forty-sixth street yard, Philadelphia, at a cost of approximately $347,000. A contract has also been let to the John F. Casey Company, Pittsburgh, Pa., for the rearrangement of tracks, construction of temporary trestles to support the tracks during construction of bridges and construction of culverts between Brilliant, Pa., and Verona, in connection with the construction of Allegheny River boulevard by the County of Allegheny, Pa., at a total cost to the railroad of $67,500.

RUTLAND.—A contract for the construction of an underpass in connection with the elimination of the grade crossing of State highway No. 5485 and the Rutland tracks at Mooers Forks, N. Y., has been awarded to the Caledonia Rock Products Corporation, Bristol, Vt., at a cost of approximately $25,500.

SOUTHERN (Cincinnati, New Orleans & Texas Pacific).—A contract for the construction of about 14 miles of second main track between Williamstown, Ky., and Blanchet and between Sadieville, Ky., and Rogers Gap has been let to the Bates & Rogers Construction Company, Chicago. The project involves about 600,000 cu. yd. of excavation.

SPOKANE, PORTLAND & SEATTLE (Oregon Electric).—This company has asked for bids for the construction of a new line between Lebanon, Ore., and Sweet Home and between Sweet Home and a point in the Calapopia valley, a total of about 30 miles. The cost of this work is estimated at $1,000,000.

TEXAS & PACIFIC (Texas Short Line).—A contract for the grading for the construction of an extension from Grand Saline, Tex., to Van, 11 miles, has been let to Gifford-Hill & Co., Dallas, Tex.

TEXAS & PACIFIC.—A contract has been let to Allhands & Davis, Joplin, Mo., for the construction of a reservoir at Annona, Tex., involving the excavation of about 50,000 cu. yd. of material. A contract has been awarded to the Railway Engineering Equipment Company, Chicago, for the installation of a high-pressure direct steaming system at the new 23-stall roundhouse at Big Spring, Tex.

Railway Finance

AKRON, CANTON & YOUNGSTOWN.—*Bonds.*—Otis & Co., the Guardian Trust Co. of Cleveland and Coffin & Burr, Inc., are offering $1,500,000 of this company's general and refunding 5½ per cent mortgage bonds, series B, due in 1945. The issue is subject to the approval of the Interstate Commerce Commission and is priced at 99¾ to yield over 5½ per cent.

ATCHISON, TOPEKA & SANTA FE.—*Abandonment.*—The Interstate Commerce Commission has authorized this company to abandon a line lying between Harper and Anthony, Kans., 7.79 miles.

BALTIMORE & OHIO.—*Acquisition.*—Oral arguments were heard by the Interstate Commerce Commission on May 3 on this company's application for authority to acquire control of the Buffalo & Susquehanna.

BATESVILLE SOUTHWESTERN.—*Abandonment.*—This company has applied to the Interstate Commerce Commission for authority to abandon its line from Batesville to Crowder, Miss., 16.93 miles.

BOSTON & MAINE.—*Acquisition.*—This company has applied to the Interstate Commerce Commission for authority to acquire control of the Springfield Terminal, which has a line from Springfield, Vt., to Charlestown, N. H., 6.5 miles, by purchase of 1,000 shares of its preferred stock at $50 a share and 1,000 shares of common stock at $180 a share.

CAROLINA, CLINCHFIELD & OHIO.—*Annual Report.*—The annual report of this company for 1929 shows net income after interest and other charges of $334,191, as compared with net income in 1928 of $605,567. Selected items from the income statement follow:

	1929	1928	Increase or Decrease
RAILWAY OPERATING REVENUES	6,783,240	6,870,121	— 86,881
TOTAL OPERATING EXPENSES	4,333,574	4,201,066	+132,508
NET REVENUE FROM OPERATIONS	2,449,666	2,669,055	—219,389
Railway tax accruals	800,000	880,000	— 80,000
Railway operating income	1,649,260	1,788,330	—139,070
Equipment rents	1,087,911	1,234,670	—146,759
Joint Facility rents	23,816	22,571	+ 1,245
NET RAILWAY OPERATING INCOME	2,713,355	3,000,430	—287,075
Non-operating income	159,256	115,473	+ 43,783
GROSS INCOME	2,872,612	3,115,903	—243,291
TOTAL DEDUCTIONS FROM GROSS INCOME	2,538,421	2,510,335	+ 28,086
NET INCOME	334,191	605,567	—271,376

CENTRAL VERMONT.—*Equipment Trust.*—The Interstate Commerce Commission has authorized this company to assume obligation and liability in respect of $1,849,000 of its equipment trust of 1929 certificates to be sold to a syndicate headed by the Chase Securities Corp., at 98.54, making the average annual cost to the railroad 5.24 per cent.

CENTRAL VERMONT.—*Abandonment.*—The Interstate Commerce Commission has authorized this company and the New London Northern to abandon the West River Railroad, extending from South Londonberry, Vt., to Brattleboro, 35.7 miles, and the Brattleboro & Whitehall has been authorized to acquire control of the line to be abandoned by purchase of its capital stock.

CHICAGO & ALTON.—*Court Sustains Foreclosure and Sale Order.*—An order for foreclosure and sale entered by Federal Judge George A. Carpenter on July 6, 1929, was sustained by the United States Circuit Court of Appeals at Chicago on May 2. The circuit court ruling upholds the opinion of Judge Carpenter that the $22,000,000 of 3½ per cent bonds of the Farmers' Loan and Trust Company constitute a first lien on the railroad, while $17,000,000 of 6 per cent bonds for which the United States Mortgage and Trust Company and E. F. Swinney are trustees are a next lien. It is expected that the decision will make it possible to consummate the sale during 1930.

CHICAGO & NORTH WESTERN.—*Bonds.*—The Interstate Commerce Commission has authorized the Chicago, St. Paul, Minneapolis & Omaha to issue a promissory note for $45,186,000 to the Chicago & North Western in evidence of indebtedness to the latter company and to issue an equivalent amount of first mortgage gold bonds, the latter to be pledged as security for the promissory note. The note will mature by 1940 at latest and will bear interest at 5½ per cent.

CHICAGO, MILWAUKEE, ST. PAUL & PACIFIC.—*Abandonment.*—The Interstate Commerce Commission has authorized this company to abandon that portion of its Elkhorn-Eagle line extending from Eagle, Wis., to Troy Center, a distance of 5.02 miles.

CHICAGO, ROCK ISLAND & PACIFIC.—*Bonds.*—The Interstate Commerce Commission has authorized this company to issue $900,000 of its general mortgage bonds to be delivered to the corporate trustee under its first and refunding mortgage and to procure the authentication and delivery of an equivalent amount of first and refunding mortgage bonds in reimbursement of its treasury for capital expenditures.

CHICAGO, ROCK ISLAND & PACIFIC.—*Directorate Increased.*—Stockholders at the annual meeting at Chicago on May 1 authorized an increase of two members in the number of directors, and W. E. Bolton, assistant to the vice-president, and William J. Camphausen, transfer agent in the treasury department, were temporarily elected to fill the new positions.

The amount of authorized capital stock was increased from $140,000,000 to $170,000,000 to provide for the conversion of bonds, following the abolition of a section of the company's charter which places a limit on the authorized amount of stock. The stockholders also approved the issuance of $32,228,000 of 30-year 4½ per cent convertible bonds for additions and betterments.

CHICAGO, ST. PAUL, MINNEAPOLIS & OMAHA.—*Abandonment.*—The Interstate Commerce Commission has authorized this company to abandon a line extending from Emerald, Wis., to Woodville, 9.59 miles.

DELAWARE & HUDSON.—*Proposed System Plan Withdrawn.*—H. T. Newcomb, as general counsel of the Delaware & Hudson Company, has advised C. D. Mahaffie, director of the Bureau of Finance of the Interstate Commerce Commission, that the company has no objection to the withdrawal of its application filed last September, for approval of a plan for the acquisition of roads in eastern territory as an Atlantic seaboard terminal system. The commission had given the company 30 days in which to show cause why the application should not be dismissed because it did not state terms and conditions and since the commission has since promulgated its consolidation plan. Mr. Newcomb said in his letter that the application is "no longer conformable with the established procedure and might have been dismissed on that ground," and also that on March 31 the company ceased to operate as a common carrier, having transferred its railroad property to the Delaware & Hudson Railroad Corporation. It therefore, he said, ceased to be within the purview of the commission and the application is probably without the scope of section 5 of the interstate commerce act. He added that the withdrawal was, of course, without prejudice to any application that might be filed by the railroad company. This removes the last of four general applications for authority to form large eastern systems filed with the commission last year.

DENVER & RIO GRANDE WESTERN.—*Notes.*—This company has applied to the Interstate Commerce Commission for authority to issue $893,400 of five-year 5 per cent promissory notes in connection with the purchase of 10 locomotives.

DETROIT, TOLEDO & IRONTON.—*Abandonment.*—The Interstate Commerce Commission has authorized this company to abandon a line extending from Durbin, Mich., to Dundee, 4.8 miles.

GULF, BEAUMONT & GREAT NORTHERN.—*Bonds.*—The Interstate Commerce Commission has authorized this company to issue a general mortgage 6 per cent bond for $1,132,000 to refund a like amount of first mortgage 5 per cent bonds which will mature July 1.

GRAND TRUNK WESTERN.—*Equipment Trust.*—The Interstate Commerce Commission has authorized this company to assume obligation and liability in respect of $4,238,000 of its equipment trust of 1929 certificates, to be sold to a syndicate headed by the Chase Securities Corp., at 98.55, which will make the average annual cost to the railroad 5.24 per cent.

GRAND TRUNK WESTERN.—*Stock.*—The Interstate Commerce Commission has authorized this company to issue such common stock without par value and having an assigned value of $25 a share as will equal $6,184,002, and $2,651,546 of 6 per cent cumulative preferred stock of the par value of $100 a share, a total of $4,663,607 of the common and the preferred stock to be delivered to the Canadian National in satisfaction of an equal amount of applicant's indebtedness for advances, and $4,171,940.94 of the common stock to be sold for not less than an equal amount of cash and the proceeds used for applicant's corporate purposes, approved.

KANSAS CITY SOUTHERN.—*Annual Report.*—The 1929 annual report of this road shows net income after interest and other charges of $3,365,219, as compared with net income of $2,941,288 in 1928. Selected items from the income statement follow:

	1929	1928	Increase or Decrease
Average Mileage operated	883.23	865.10	+ 18.13
RAILWAY OPERATING REVENUES	21,978,222	21,423,897	+554,325
Maintenance of way	2,595,480	2,485,055	+110,425
Maintenance of Equipment	3,433,248	3,321,178	+112,070
Transportation	6,179,335	6,369,109	—189,774
TOTAL OPERATING EXPENSES	14,275,415	14,089,021	+186,394
NET REVENUE FROM OPERATIONS	7,702,807	7,334,875	+367,932
Railway tax accruals	1,446,458	1,259,496	+186,962
Railway operating income	6,244,544	6,070,971	+173,573
Hire of freight cars	940,359	935,499	+ 4,860
Joint Facility rents	99,114	90,189	+ 8,925
Non-operating income	1,305,902	1,898,702	—592,800
GROSS INCOME	7,550,445	7,969,673	—419,228
Rent for leased roads	171,880	171,759	+ 121
Interest on funded debt	2,585,320	2,590,231	— 4,911
TOTAL DEDUCTIONS FROM GROSS INCOME	4,185,227	5,028,386	—843,159
NET INCOME	3,365,219	2,941,288	+423,931

LONG ISLAND.—*Abandonment.*—The Interstate Commerce Commission, on petition of the Transit Commission of the State of New York for a rehearing of the case in which it authorized this company to abandon its Whitestone branch in New York, has extended the effective date of its certificate from May 10 to June 10.

MAINE CENTRAL.—*Bonds.*—The Interstate Commerce Commission has authorized the Portland & Ogdensburg to issue $2,119,000 of its 4½ per cent first mortgage bonds. This issue was previously authorized in 1928, but sale could not be effected at the price specified by the commission—96. The issue is now authorized for sale at 88, the Maine Central, under the terms of its lease, having to bear the discount under par. If the issue can be sold at the minimum price it will make the cost to the Maine Central 5.41 per cent.

MERIDIAN & BIGBEE RIVER.—*Operation.*—The Interstate Commerce Commission has denied this company's application for a certificate authorizing it to operate a line owned by the Long-Bell Lumber Company extending from Crandall, Miss., to Cliff Williams, approximately 25 miles.

MISSOURI PACIFIC. — *Control by Van Sweringens.*—Approval of control of the Missouri Pacific by the Van Sweringen interests was given by the Missouri Public Service Commission at Jefferson City, Mo., on May 6. The commission's approval took the form of an order authorizing Alleghany Corporation to acquire in excess of 10 per cent of the stock of the Missouri Pacific.

PERE MARQUETTE. — *Annual Report.* — The 1929 annual report of this road shows net income after interest and other charges of $7,458,460, as compared with net income in 1928 of $8,466,971. Selected items from the income statement follow:

	1929	1928	Increase or Decrease
Average Mileage operated	2,241.	2,242.50	— 1.52
RAILWAY OPERATING REVENUES	48,468,439	45,761,568	+2,706,871
Maintenance of way	5,614,108	4,911,908	+ 702,201
Maintenance of Equipment	8,632,457	7,238,618	+1,393,839
Transportation	15,916,795	14,918,086	+ 998,709
TOTAL OPERATING EXPENSES	34,345,301	31,036,347	+3,308,954
Operating ratio	70.86	67.82	+ 3.04
NET REVENUE FROM OPERATIONS	14,123,138	14,725,221	— 602,082
Railway tax accruals	2,962,195	2,725,029	+ 237,167
Equipment rents	1,124,369	686,098	+ 438,271
Joint Facility rents	752,624	712,157	+ 40,467
NET RAILWAY OPERATING INCOME	9,273,417	10,596,357	—1,322,941
Non-operating income	749,006	468,979	+ 280,027
GROSS INCOME	10,022,423	11,065,337	—1,042,914
NET INCOME	7,458,460	8,466,971	—1,008,511

READING. — *Bonds.* — The Interstate Commerce Commission has authorized the Atlantic City Railroad to issue $75,000 of first consolidated mortgage 4 per cent bonds to be guaranteed by the Reading, the proceeds to be used to retire a similar amount of maturing purchase money mortgage bonds.

ST. LOUIS & O'FALLON.—*Valuation.*—Further hearings in connection with the Interstate Commerce Commission's valuation of this property, which was made the subject of a test case before the Supreme Court of the United States, were begun at Washington on May 5 for the purpose of obtaining additional evidence as to changes in the valuation of the property since 1923, the last year

(*Continued on page 1166*)

Annual Reports

The Central Railroad Company of New Jersey—Year Ended December 31, 1929

New York, N. Y., April 10, 1930.

TO THE STOCKHOLDERS:

The Board of Directors herewith submits report of the operations and affairs of the Company as of December 31, 1929.

CORPORATE INCOME STATEMENT

For the Year Ended December 31, 1929, Compared with the Previous Year

	1929	1928	Changes
Railway Operating Revenues	$58,136,939.94	$58,002,056.97	Inc. $ 134,882.97
Railway Operating Expenses	42,218,295.95	42,122,159.58	Inc. 96,136.37
Net Operating Revenue	$15,918,643.99	$15,879,897.39	Inc. $ 38,746.60
Railway Tax Accruals	$ 5,074,796.66	$ 5,059,306.60	Inc. $ 15,490.06
Uncollectible Railway Revenue	10,959.30	17,469.85	Dec. 6,510.55
Hire of Equipment	1,249,844.61	1,144,902.40	Inc. 104,942.21
Joint Facility Rents	215,999.03	273,161.29	Dec. 57,162.26
Charges to Net Operating Revenues	$ 6,551,599.60	$ 6,494,840.14	Inc. $ 56,759.46
Net Railway Operating Income	$ 9,367,044.39	$ 9,385,057.25	Dec. $ 18,012.86
Non-Operating Income	1,587,697.83	2,649,955.66	Dec. *1,062,257.83
Total Income from all Sources	$10,954,742.22	$12,035,012.91	Dec. $1,080,270.69
Deductions for Rentals	$ 2,695,192.92	$ 2,696,582.85	Dec. $ 1,389.93
Deductions for Interest	2,875,236.13	2,966,152.14	Dec. 90,916.01
Miscellaneous Tax Accruals	325,664.59	307,047.45	Inc. 18,617.14
All Other Charges against Income	15,893.88	13,520.80	Inc. 2,373.08
Total Deductions from Income	$ 5,911,987.52	$ 5,983,303.24	Dec. $ 71,315.72
Net Income	$ 5,042,754.70	$ 6,051,709.67	Dec. $1,008,954.97
Income Applied to sinking and Other Reserve Funds	$ 5,995.23	.....	Inc. $ 5,995.23
Income Balance Transferred to Profit and Loss	$ 5,036,759.47	$ 6,051,709.67	Dec. $1,014,950.20

* In 1928 this account included Interest during Construction on Newark Bay Bridge, Perth Amboy and Somerville improvements. No similar credit in 1929.

General

OPERATIONS FOR THE YEAR: Income Statement showing the results of operations for the year 1929, is shown above. Operating Revenues aggregated $58,136,939.94, an increase of $134,882.97 over previous year, Operating Expenses were $42,218,295.95, an increase of $96,136.37, and Net Revenue from Railway Operations aggregated $15,918,643.99, an increase of $38,746.60 over previous year.

Operating Ratios for the years 1927, 1928 and 1929, were as follows:

Year 1927.....73.78%
Year 1928.....72.62%
Year 1929.....72.62%

FREIGHT TRAFFIC: The generally improved business conditions prevailing during the latter part of 1928, continued through the first ten months of 1929, and resulted in your company enjoying its full share of merchandise traffic offered for shipment. Merchandise revenue for the year 1929, increased $1,259,447.50, over the previous year. Bituminous coal traffic fell off slightly during the year, due to the movement of a considerable volume of this commodity via water competitive routes. Anthracite coal traffic was seriously affected by the mild climatic conditions which prevailed during the year, and to the increased use of substitute fuels.

PASSENGER TRAFFIC: Passenger Traffic Revenue, including Mail and Express Revenue, increased $477,919.94. Of this increase $299,107.32 applies to Rail Passenger Revenue. This increase is attributed to increased commutation and local passenger business, together with the inauguration of special feature trains and a further improvement in train schedules.

MAIL REVENUE: Mail Revenue aggregating $436,806.26, reflects an increase over previous year of $172,483.69, due principally to increased compensation allowed carriers by the Government, and includes the increased current rates, as well as an adjustment paid by the Government in June 1929, of $115,564.00 covering the period May 9th, 1925, to July 31st, 1928.

EXPRESS: With the expiration, on February 28th, 1929, of Contract under which the American Railway Express Company had been conducting the express transportation business over certain Railroads, a new agreement was entered into with the Railway Express Agency, Incorporated, effective March 1st, 1929, in which the several carriers, including your company, became Stockholders. The new contract is substantially in the form of the previous uniform express contract except that under the new arrangement the net income is the property of the shareholders.

TRACK IMPROVEMENTS: There were laid in replacement during the year:

121,396 Cross Ties.
31,683 Cubic Yards of Stone Ballast.
53.51 Miles of Main Track with new steel rails.
23.28 Miles of Main Track with second hand rails.
0.87 Miles of Side Track with new rails.
38.62 Miles of Side Track with second hand rails.

TAXES: The taxes levied by Local, State and Federal Authorities during 1929, aggregated $5,400,461, an increase over the preceding year of $34,107. Taxes paid during 1929, represent 9.29% of Gross Operating Revenues or 33.93% of Net Operating Revenue and exceed total annual dividend payment to Stockholders by 64.03%.

EQUIPMENT RETIREMENTS: Following out a program for the retirement of obsolete equipment, during the year there were retired:

20 Locomotives.
1,359 Freight Cars.
37 Passenger Cars.
108 Work Equipment.

Additions and Betterments

Special mention is made of the following items:

SHOP AND POWER PLANT TOOLS AND MACHINERY: The program of modernizing tools and machinery has been continued during the year. Expenditures made for additions and betterments, or in replacement of such equipment, aggregate $115,000.00.

AUTOMATIC TRAIN CONTROL: The coded continuous induction system of train control with engine cab signals, together with color light wayside signals at head blocks of passing sidings, but without intermediate wayside automatic signals on the single track line of the Southern Division between Matawan and Atlantic Highlands, work on which was started in 1928, was placed in service January 28th, 1929. This installation is of particular interest in that for the wayside automatic indications dependence is placed solely on the engine cab signals. The operation has proven most satisfactory. The cost of the work was $86,558.80.

GREEN BROOK WATER STATION: The water and compressed air station at Green Brook, one of the most important plants of its kind on the road was damaged by fire on March 2nd. In lieu of rebuilding an inadequate and obsolete type of structure, a new modernized plant, the operation of which is automatic, dispensing with continuous labor at the plant, was placed in service in November at a cost of approximately $54,000.

ELIMINATION OF GRADE CROSSINGS THROUGH CRANFORD: Work on this project has been actively carried on throughout the year. On August 11th two westbound tracks on the high grade were placed in service. On January 12th, 1930, two eastbound tracks on the high line were placed in service. With this accomplished the crossing of all through railroad traffic with the highways at grade was eliminated. Two additional main tracks are still to be constructed and there remains considerable work on the station, etc., to be done.

[ADVERTISEMENT]

The project will be completed late in 1930, and is estimated to cost $2,300,000.

ADDITIONAL RETAIL COAL POCKET FACILITIES: Improved retail coal pocket facilities have been provided at Jersey City, N. J., and a new retail coal pocket is being constructed at Claremont, N. J. The estimated aggregate cost of these facilities is $175,000.

Special Comment

HIBERNIA MINE RAILROAD COMPANY: During the year your Company acquired by purchase 23 additional shares of stock which, together with 1,977 shares previously purchased, as shown in Annual Report for the year 1928, represents ownership of the entire authorized issue of 2,000 shares.

RARITAN RIVER RAILROAD COMPANY: Your Company acquired by purchase and held as of December 31st, 1929, 3,042 shares of the Capital Stock of a total authorized issue of 10,000 shares.

ALLENTOWN TERMINAL RAILROAD COMPANY: On July 1st, 1929, the 6% extended bonds aggregating $450,000, became due and payable. These bonds were extended for a further period of 25 years, to mature July 1, 1954, bearing interest at the rate of 4½% per annum, payable semi-annually January 1st and July 1st. Your Company acquired by purchase and held as of December 31st, 1929, $204,000 par value of the extended bonds.

NEW INDUSTRIES: During the year 66 new industries were located at various points where they will be served by your Company.

The Management takes pleasure in expressing its appreciation to the Officers and Employes for their loyal and efficient service.

Appended will be found Balance Sheet as of December 31st, 1929, and various other statements.

By Order of the Board of Directors.

R. B. WHITE,
President.

General Balance Sheet, December 31, 1929, Compared with December 31, 1928

Assets

	December 31, 1929	December 31, 1928	+ Increase — Decrease
Investments:			
Road	$ 95,095,787.24	$ 93,548,788.27	+$1,546,998.97
Equipment	69,959,974.09	71,062,342.06	— 1,102,367.97
Total	$165,055,761.33	$164,611,130.33	+$ 444,631.00
Improvements on Leased Railway Property	$ 13,605,288.75	$ 13,442,936.96	+$ 162,351.79
Miscellaneous Physical Property	3,521,820.26	3,463,810.97	+ 58,009.29
Investments in Affiliated Companies,			
Stocks	4,586,705.80	3,820,490.22	+ 766,215.58
Bonds	1,840,000.00	1,636,000.00	+ 204,000.00
Advances	3,506,441.83	3,910,846.96	— 404,405.13
Notes and Mortgages	240,000.00	40,000.00	+ 200,000.00
Other Investments,			
Stocks	20,120.90	20,120.90	
Bonds	9,712,847.50	9,713,347.50	— 500.00
Miscellaneous	2,950.00	3,050.00	— 100.00
Total	$ 37,036,175.04	$ 36,050,603.51	+$ 985,571.53
Current Assets:			
Cash	$ 2,721,349.49	$ 2,628,392.45	+$ 92,957.04
Special Deposits	41,744.95	56,841.65	— 15,096.70
Loans and Bills Receivable	1,100,306.98	1,000,000.00	+ 100,306.98
Traffic and Car Service Balances Receivable	1,330,853.62	1,095,093.05	+ 235,760.57
Net Balance Receivable from Agents and Conductors	577,361.24	779,164.69	— 201,803.45
Miscellaneous Accounts Receivable	1,530,233.85	1,786,385.55	— 256,151.70
Material and Supplies	2,740,475.85	3,224,376.57	— 483,900.72
Interest and Dividends Receivable	164,355.43	149,485.41	+ 14,870.02
Total	$ 10,206,681.41	$ 10,719,739.37	—$ 513,057.96
Deferred Assets:			
Working Fund Advances	$ 106,684.00	$ 104,769.10	+$ 1,914.90
Insurance and Other Funds	175,584.41	83,882.37	+ 91,702.04
Other Deferred Assets	137,253.39	152,950.58	— 15,697.19
Total	$ 419,521.80	$ 341,602.05	+$ 77,919.75
Unadjusted Debits:			
Rents and Insurance Premiums Paid in Advance	$ 733,312.75	$ 681,590.13	+$ 51,722.62
Other Unadjusted Debits	3,035,370.81	3,010,411.46	+ 24,959.35
Securities Issued or Assumed—Unpledged	1,674,000.00	1,874,000.00	— 200,000.00
Total	$ 5,442,683.56	$ 5,566,001.59	—$ 123,318.03
Grand Total	$218,160,823.14	$217,289,076.85	+$ 871,746.29

Liabilities

	December 31, 1929	December 31, 1928	+ Increase — Decrease
Stock:			
Capital Stock, Common— Authorized $30,000,000.00 Not Issued 2,563,200.00 Outstanding	$ 27,436,800.00	$ 27,436,800.00	
Long Term Debt:			
Funded Debt Unmatured, Equipment Obligations in Co.'s Treasury	$ 600,000.00	$ 800,000.00	—$ 200,000.00
Equipment Obligations with Public	8,776,000.00	10,357,500.00	— 1,581,500.00
Mortgage Bonds in Co.'s Treasury	1,074,000.00	1,074,000.00	
Mortgage Bonds with Public	48,924,000.00	48,924,000.00	
Total	$ 59,374,000.00	$ 61,155,500.00	—$1,781,500.00
Current Liabilities:			
Traffic and Car Service Balances Payable	$ 1,782,828.73	$ 2,056,574.43	—$ 273,745.70
Audited Accounts and Wages Payable	3,533,653.33	3,220,302.95	+ 313,350.38
Miscellaneous Accounts Payable	970.95	885.60	+ 85.35
Interest Matured Unpaid	874,565.00	879,076.25	— 4,511.25
Dividends Matured Unpaid	48,042.50	51,560.50	— 3,518.00
Funded Debt Matured Unpaid	9,831.60	18,381.60	— 8,550.00
Unmatured Dividends Declared	1,097,472.00	1,097,472.00	
Unmatured Interest Accrued	158,274.15	184,058.75	— 25,784.60
Unmatured Rents Accrued	4,985.00	4,250.00	+ 735.00
Other Current Liabilities	14,145.18	7,095.17	+ 7,050.01
Total	$ 7,524,768.44	$ 7,519,657.25	+$ 5,111.19
Deferred Liabilities:			
Other Deferred Liabilities	$ 152,816.51	$ 120,465.36	+$ 32,351.15
Unadjusted Credits:			
Tax Liability	$ 507,989.44	$ 473,333.10	+$ 34,656.34
Insurance and Casualty Reserve	151,953.54	60,251.50	+ 91,702.04
Accrued Depreciation—Equipment	28,405,214.41	27,708,909.06	+ 696,305.35
Accrued Depreciation—Road	280,940.00	140,470.00	+ 140,470.00
Other Unadjusted Credits	136,134.58	193,295.57	— 57,160.99
Total	$ 29,482,231.97	$ 28,576,259.23	+$ 905,972.74
Corporate Surplus:			
Additions to Property through Income and Surplus,			
Investment in Road and Equipment	$ 56,588,428.42	$ 57,471,546.11	—$ 883,117.69
Improvements on Leased Railway Property	11,484,829.66	11,236,459.65	+ 248,370.01
Investment in Miscellaneous Physical Property	201.82	6,257.07	— 6,055.25
Total	$ 68,073,459.90	$ 68,714,262.83	—$ 640,802.93
Profit and Loss:	$ 26,116,746.32	$ 23,766,132.18	+$2,350,614.14
Grand Total	$218,160,823.14	$217,289,076.85	+$ 871,746.29

PROFIT AND LOSS—December 31, 1929

Credit Balance January 1, 1929		$23,766,132.18
Credit Balance transferred from Income Account		5,036,759.47
Unrefundable Overcharges		20,214.65
Donations		157,762.40
Miscellaneous Credits		1,155,430.69
Profit on Road and Equipment Sold		11,072.59
		$30,147,371.98
Less		
Dividend Appropriations of Surplus	$3,292,416.00	
Surplus Appropriated for Investment in Physical Property	410,445.22	
Debt Discount Extinguished through Surplus—Credit	248,950.00	
Loss on Retired Road and Equipment	200,276.55	
Miscellaneous Debits	376,437.89	4,030,625.66
Credit Balance December 31, 1929		$26,116,746.32

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Seventy-Sixth Annual Report of the Chicago, Burlington & Quincy Railroad Company

Chicago, January 2, 1930.

To the Stockholders of the Chicago, Burlington & Quincy Railroad Company:

The following is the report of your Board of Directors for the year ended December 31, 1929:

Comparative Statement of Income, Years Ended December 31

Per cent of Ry. Oper. Revenue	1929		1928	Per cent of Ry. Oper. Revenue
		RAILWAY OPERATING REVENUES		
78.06	$126,777,843.96	Freight	$126,952,879.35	77.94
11.59	18,817,973.10	Passenger	19,715,276.10	12.10
2.94	4,772,937.57	Mail	4,181,409.98	2.57
2.73	4,435,119.24	Express	4,348,682.17	2.67
2.56	4,157,410.57	All other transportation	4,413,370.28	2.71
1.57	2,547,035.42	Incidental	2,471,026.12	1.51
.55	901,604.75	Joint facility	808,765.34	.50
100.00	$162,409,924.61	Total railway operating revenues	$162,891,409.34	100.00
		RAILWAY OPERATING EXPENSES		
15.03	$ 24,414,604.84	Maintenance of way and structures	$ 25,515,421.87	15.66.
16.06	26,080,966.31	Maintenance of equipment.	27,197,585.87	16.70
2.06	3,353,452.35	Traffic	3,275,344.86	2.01
32.07	52,083,143.89	Transportation	52,922,444.94	32.48
.99	1,611,939.21	Miscellaneous operations	1,496,193.19	.92
2.78	4,508,564.49	General	4,411,170.29	2.71
Cr. .30	Cr. 487,128.62	Transportation for Investment—Credit	Cr. 627,002.20	Cr. .38
68.69	$111,565,542.47	Total railway operating expenses	$114,191,158.82	70.10
31.31	$ 50,844,382.14	Net revenue from railway operations	$ 48,700,250.52	29.90
.....	$ 12,025,393.54	Railway tax accruals	$ 11,192,209.54	.....
.....	26,562.54	Uncollectible railway revenues	33,783.52	.....
.....	$ 38,792,426.06	Railway operating income.	$ 37,474,257.46	.....
.....	Dr.1,267,146.48	Hire of equipment—Net.	Dr.2,467,281.60	.....
.....	Dr.2,167,316.76	Joint facility rents—Net.	Dr.2,094,608.84	.....
.....	$ 35,357,962.82	Net railway operating income	$ 32,912,367.02	.....
		OTHER NON-OPERATING INCOME		
.....	$ 589,206.01	Miscellaneous rent income.	$ 581,139.62	.....
.....	3,046,484.33	Dividends and miscellaneous interest	2,399,091.22	.....
.....	76,802.02	Miscellaneous income	57,495.04	.....
.....	$ 3,712,492.36	Total other non-operating income	$ 3,037,725.88	.....
.....	$ 39,070,455.18	Gross income.	$ 35,950,092.90	.....
		OTHER DEDUCTIONS FROM GROSS INCOME		
.....	$ 219,026.65	Miscellaneous rents.	$ 202,383.68	.....
.....	9,084,635.00	Interest on funded debt.	9,177,555.00	.....
.....	44,984.24	Interest on unfunded debt.	146,656.64	.....
.....	145,271.02	Amortization of discount on funded debt	145,245.65	.....
.....	$ 9,493,916.91	Total other deductions from gross income	$ 9,671,840.97	.....
.....	$ 29,576,538.27	Net income	$ 26,278,251.93	.....
		DISPOSITION OF NET INCOME		
.....	$ 17,083,850.00	Dividends	$ 17,083,820.00	.....
.....	$ 12,492,688.27	Income balance transferred to profit and loss	$ 9,194,431.93	.....

General Operations

REVENUES:

Total Operating Revenues for 1929		$162,409,925	
Total Operating Revenues for 1928		162,891,409	
Decrease		$ 481,484	.30%

The decrease resulted from the following causes:

Freight	Decreased	$175,035	.14%
Passenger	Decreased	897,303	4.55%
Mail	Increased	591,528	14.15%
Express	Increased	86,437	1.99%
Other Transportation Revenues	Decreased	255,959	5.80%
Demurrage	Increased	43,584	15.01%
Other Incidental Operating Revenues	Increased	125,264	4.19%
Total Decrease		$481,484	.30%

FREIGHT:

Tons carried increased slightly over last year, but a variance in the character of the tonnage handled resulted in a decrease in freight revenue of $175,035, or .14%.

A comparison of tonnage by commodities 1929 with 1928 shows the following:

		Tons	
Products of Agriculture	Decreased	622,800	6.52%
Animals and Products	Decreased	132,677	4.94%
Products of Mines	Increased	1,560,668	8.12%
Products of Forests	Decreased	134,043	5.48%
Manufactures and Miscellaneous	Increased	102,694	.97%
Less Carload Tonnage	Increased	36,284	2.39%
Total Tonnage	Increased	810,126	1.76%

A comparison of carloads shows:

Total cars (all commodities) in 1929		1,468,784	
Total cars (all commodities) in 1928		1,477,074	
Decrease in 1929		8,290	.56%

While crop conditions in our territory were considered generally favorable in 1929, a decrease of 14.6% in the corn movement and miscellaneous fluctuations in other agricultural commodities resulted in a decrease of 6.52% in the total movement of products of agriculture. As result of an unfavorable crop in the corn belt during 1927, the 1928 corn movement was the heaviest in the history of the railroad, whereas the movement in 1929 was normal.

Animals and products decreased 4.94%, resulting from the the lightest movement in several years. This was due largely to competition by truck haul, which is increasing rapidly. The tonnage of all kinds of livestock decreased 6.83%. The Company serves eight important markets and during the year 1929 approximately 18% of all the live stock received at these markets was brought in by truck.

Products of mines increased 8.12%. With industrial operations at a high peak and Southern Illinois operators in a better position to compete with other fields, the tonnage of bituminous coal increased 9.57% over last year. The tonnage originating on the Burlington was 73.93% of the total and 61.37% of this tonnage went to system points. Of the 26.07% received from connections 94.43% went to points on the Burlington System. Of all tonnage handled to points on the system 64.82% originated at points on the Burlington and 35.18% came from connections. During the previous year these percentages were 66.32% and 33.68%, respectively. Due to a decline in the use of anthracite there was a substantial increase in coke tonnage.

Building operations being on a somewhat smaller scale than during the previous year, and a further increase in the use of lumber substitutes, resulted in a decrease of 5.48% in the movement of lumber and other forest products. Principal decreases were through the Paducah, St. Louis and St. Paul gateways.

The movement of manufactured products was the heaviest in the history of the railroad, exceeding the record breaking tonnage of last year by .97%. A record movement of agricultural implements and a heavier movement of refined oil, iron and steel and cement contributed largely to the increase shown in the total movement of manufactures and miscellaneous.

PASSENGER:

The continuing development of hard roads and the consequent increase in highway traffic accounts for the decrease in passenger revenue.

The revenue from Chicago suburban traffic increased 1.79%, with substantially the same increase in suburban train miles. Exclusive of suburban traffic there were carried 233,233 less revenue passengers than in 1928, a decrease of 4.23%, and the passenger revenue miles decreased 15,783,935, or 2.66%; the figures indicating the decrease to have been principally in short haul traffic.

Low rate summer tourist traffic is constituting a larger proportion of our total traffic each year and the tendency to establish excursion rates for holidays, and special occasions has resulted in a decrease in the average earnings per passenger mile from 3.088 cents in 1928 to 3.013 in 1929.

The additional train mileage on our Chicago-St. Paul line incident to the North Pacific Coast train service adjustment resulted in an increase in the passenger train miles of 0.54%.

[ADVERTISEMENT]

This was the fifth year for Burlington Escorted Tours operated jointly with the Great Northern and Northern Pacific and we handled 4,104 people, an increase of 723, or 21.38%, over last year.

The increase of $591,528, or 14.15%, in the revenues received for the transportation of the United States mails is due to the increased rate of pay recently granted by the Interstate Commerce Commission and does not include retroactive mail payments from May 9, 1925 to July 31, 1928 received in 1929.

EXPRESS:

The agreement with the American Railway Express Company expired February 28, 1929, since which date the railways have joined in the operation of the express traffic and the total express revenue for the two months under the old agreement and ten months under the new arrangement showed an increase in 1929 of $86.437, equivalent to 1.99%, as compared with 1928.

DEMURRAGE:

Demurrage assessed and collected for the year 1929 shows an increase of $43,584 as compared with 1928. This increase was due to an increased volume of hard road construction and delay of cars by contractors at outlying points; also an increase in demurrage paid on grain at Kansas City, Omaha, and Council Bluffs due to congestion of grain at those points while the crop was being moved.

EQUIPMENT RENTS:

Equipment rents showed a decrease debit year 1929 as compared with 1928.

The net freight car per diem credit was the largest in the past eight years, exclusive of the year 1926. This showing was made possible by more prompt handling of cars, which is reflected in the average miles per car per day of 37.8 in 1929 compared with 36.6 in 1928. This was the highest figure yet obtained on the Burlington.

In 1929 there were originated on the line 938,288 carloads of freight, not including less than carload shipments, as compared with 945,324 carloads in 1928, or a decrease of 7,036 carloads.

There were received from connections a total of 530,496 carloads, not including less than carload shipments, or a decrease of 1,254 cars.

While it was necessary to accumulate a large number of cars to meet the requirements for grain loading at harvest time, these cars were not accumulated until shortly before they were required and were disposed of promptly after the peak had passed.

Operating Statistics

Tons of revenue freight carried, 1929	46,819,641	
Tons of revenue freight carried, 1928	46,009,515	
Increase	810,126	1.76%
Revenue tons one mile, 1929	12,873,521,492	
Revenue tons one mile, 1928	12,931,723,281	
Decrease	58,201,789	.45%
Revenue tons per train mile, 1929	723.93	
Revenue tons per train mile, 1928	714.67	
Increase	9.26	1.30%
Revenue tons per loaded car, 1929	23.10	
Revenue tons per loaded car, 1928	22.70	
Increase	.40	1.76%
Average revenue per ton mile (cents), 1929	.985	
Average revenue per ton mile (cents), 1928	.982	
Increase	.003	.31%
Average distance hauled per revenue ton (miles), 1929	274.96	
Average distance hauled per revenue ton (miles), 1928	281.07	
Decrease	6.11	2.17%
Revenue passengers carried, 1929	13,848,078	
Revenue passengers carried, 1928	13,896,397	
Decrease	48,319	.35%
Revenue passengers carried one mile, 1929	719,016,996	
Revenue passengers carried one mile, 1928	730,969,834	
Decrease	11,952,838	1.64%
Average distance carried revenue passengers, 1929	51.92	
Average distance carried revenue passengers, 1928	52.60	
Decrease	.68	1.29%

Expenditures (Operating)

Total operating expenses, 1929	$111,565,542.47	
Total operating expenses, 1928	114,191,158.82	
Decrease	$2,625,616.35	2.30%

The decrease of $2,625,616.35, or 2.30%, in operating expenses was the result of various conditions having a direct influence on the three major classes of such charges; among the more important of which were the following:

Maintenance of way expenses as a whole decreased $1,100,817.03, or 4.31%. In 1928 conditions were such that it was necessary to incur comparatively heavy expenditures for rail replacements and related track material. The benefit of these expenditures extended into the year 1929.

Total transportation expenses were reduced $839,301.05 or 1.59%, under the relatively low level prevailing in 1928. A general increase in transportation efficiency, as evidenced by an increase of 9.26 revenue tons per train mile, or 1.30%, contributed largely to this favorable result. Associated with it was a substantial decrease in the amount expended for locomotive fuel due both to decreased issues and to favorable price levels. There was a continued application of rigid measures of economy in all departments, the forces such as those employed in station service being checked by individual positions with substantial returns in improved general efficency. Transportation ratio was 32.07%, which is the lowest on record.

Maintenance of equipment expenses as a whole decreased $1,116,619.56, or 4.11%—this after absorbing increases in rates of pay approximating $700,000. A factor in this decrease was a credit of $476,077.59 to operating expense due to an accounting adjustment ordered by the Interstate Commerce Commission in connection with rebuilt cars.

Expenditures (Capital)

Capital expenditures during the year were directed primarily towards securing increased safety and economy of operation and improved service. No new lines were constructed. Total expenditures chargeable to Capital Account were as follows:

For Road	$8,651,025.60
For Equipment	906,103.47
For General	221,144.67
Total	$9,778,273.74

Burlington Transportation Co.

February 14, 1929, the Burlington Transportation Company was incorporated to engage in the motor vehicle transportation of passengers in Illinois and other States in which this Company operates with an authorized capitalization of $500,000, $250,000 of which was issued at date of incorporation, the remaining $250,000 being issued October 23, 1929. The entire issue is owned by your Company.

Agricultural

Income from farm production for 1929 was generally higher in states served by the Burlington than in 1928. States west of the Missouri River more than offset a slight deficiency in farm income of one or two states on Lines East. Favorable crop yields generally of the major cash crops combined with improved prices resulted in a satisfactory financial year for the farmer and livestock producer in the territory. No extreme surplus nor distress price for any important farm product developed in 1929, indicating a better balance of agricultural production than for several years. Demand for farm land has improved; there have been fewer forced sales. A distinct improvement in mortgage payments and reduction in delinquencies have been evident although heavy purchases of farm equipment and modern machinery were made. Land prices have improved; there is evidence of land being purchased for investment by men not engaged in farming. The shift in population from farm to city was smaller in 1929 than for any year since 1920.

Pension Department

The Pension Department was established January 1, 1922. During 1929, 192 employes were added to the Pension Roll and 117 pensioners died. The number carried on Pension Roll December 31, 1929, was 1,166, their average monthly pension being $56.69, average age at retirement 68 years 6 months, and their active service average 38 years 9 months. The charges to pension account in 1929 amounted to $817,540.48, and the cost of the operation of the Pension Plan since its establishment has been $4,620,556.93. A total of 1,869 employes have been placed on the Pension Roll, 703 of whom have died.

The directors take pleasure in commending the officers and employes of the Company for their competent and effective work, and their loyal cooperation during the year.

By order of the Board of Directors.

FREDERICK E. WILLIAMSON,
President.

[ADVERTISEMENT]

Missouri-Kansas-Texas Railroad Company

and Controlled Companies

Annual Report for the Year Ended December 31, 1929

St. Louis, Mo., April 16, 1930.

TO THE STOCKHOLDERS:

The Board of Directors submits herewith a report of the operations and affairs for the year ended December 31, 1929.

A summary of results of operation compared with the year 1928 is as follows:

Missouri-Kansas-Texas Lines Income Account, Year Ended December 31, 1929, Compared with Year Ended December 31, 1928

	1929 Amount	1928 Amount	+ Increase or — Decrease
Average Mileage Operated..	3,188.57	3,188.54	+ .03
OPERATING REVENUES:			
Freight	$44,619,989.79	$45,262,652.73	—$ 642,662.94
Passenger	6,206,420.53	6,767,528.93	— 561,108.40
Mail	*1,823,921.67	1,201,406.65	+ 622,515.02
Express	1,843,833.85	1,824,972.93	+ 18,860.92
Miscellaneous	805,033.45	842,687.88	— 37,654.43
Incidental	684,089.33	614,349.33	+ 69,740.00
Joint Facility	41,150.53	35,519.97	+ 5,630.56
Total Operating Revenues	$56,024,439.15	$56,549,118.42	—$ 524,679.27
OPERATING EXPENSES:			
Maintenance of Way and Structures	$ 7,708,903.72	$ 7,861,519.94	—$ 152,616.22
Maintenance of Equipment	9,854,928.29	10,143,557.86	— 288,629.57
Traffic Expenses	1,516,157.57	1,379,157.80	+ 136,999.77
Transportation Expenses	16,149,710.01	16,920,528.89	— 770,818.88
Miscellaneous Operations	346,928.62	371,748.18	— 24,819.56
General Expenses	2,062,332.42	2,447,446.70	— 385,114.28
Transportation for Investment—Cr.	182,621.06	190,143.48	+ 7,522.42
Total Operating Expenses	$37,456,339.57	$38,933,815.89	—$1,477,476.32
Net Operating Revenue	$18,568,099.58	$17,615,302.53	+$ 952,797.05
RAILWAY TAX ACCRUALS	$ 3,289,868.20	$ 3,074,029.43	+$ 215,838.77
UNCOLLECTIBLE RAILWAY REVENUES	17,102.80	17,357.75	— 254.95
Total	$ 3,306,971.00	$ 3,091,387.18	+$ 215,583.82
Operating Income	$15,261,128.58	$14,523,915.35	+$ 737,213.23
OTHER OPERATING INCOME:			
Rent from Locomotives	$ 32,444.27	$ 171,703.86	—$ 139,259.59
Rent from Passenger Train Cars	135,707.39	160,884.73	— 25,177.34
Rent from Work Equipment	21,753.52	17,818.52	+ 3,935.00
Joint Facility Rent Income	157,669.13	183,588.73	— 25,919.60
Total Other Operating Income	$ 347,574.31	$ 533,995.84	—$ 186,421.53
Total Operating Income	$15,608,702.89	$15,057,911.19	+$ 550,791.70
DEDUCTIONS FROM OPERATING INCOME:			
Hire of Freight Cars—Debit Balance	$ 2,038,734.05	$ 1,836,752.02	+$ 201,982.03
Rent for Locomotives	39,496.96	40,331.83	— 834.87
Rent for Passenger Train Cars	121,714.14	111,473.80	+ 10,240.34
Rent for Work Equipment	89,189.58	55,881.23	+ 33,308.35
Joint Facility Rents	753,476.10	809,000.95	— 55,524.85
Total Deductions from Operating Income	$ 3,042,610.83	$ 2,853,439.83	+$ 189,171.00
Net Railway Operating Income	$12,566,092.06	$12,204,471.36	+$ 361,620.70
NON-OPERATING INCOME:			
Income from Lease of Road	$ 117,893.40	$ 139,862.86	—$ 21,969.46
Miscellaneous Rent Income	153,290.92	153,946.00	— 655.08
Miscellaneous Non-Operating Physical Property	10,353.71	15,412.04	— 5,058.33
Dividend Income	4,500.00	360.00	+ 4,140.00
Income from Funded Securities	78,982.72	83,768.45	— 4,785.73
Income from Unfunded Securities and Accounts	705,445.98	542,143.49	+ 163,302.49
Miscellaneous Income	4,500.31	3,272.23	+ 1,228.08
Total Non-Operating Income	$ 1,074,967.04	$ 938,765.07	+$ 136,201.97
Gross Income	$13,641,059.10	$13,143,236.43	+$ 497,822.67
DEDUCTIONS FROM GROSS INCOME:			
Rent for Leased Roads	$ 4,668.24	$ 7,698.53	—$ 3,030.29
Miscellaneous Rents	1,907.35	1,854.40	+ 52.95
Miscellaneous Tax Accruals	8,600.19	12,768.34	— 4,168.15
Interest on Unfunded Debt	29,111.92	42,638.87	— 13,526.95
Miscellaneous Income Charges	524.24	860.80	— 336.56
Total Deductions from Gross Income	$ 44,811.94	$ 65,820.94	—$ 21,009.00
Balance Available for Interest	$13,596,247.16	$13,077,415.49	+$ 518,831.67
Fixed Interest Charges	$ 4,200,673.13	$ 4,255,600.62	—$ 54,927.49
Balance Available for Interest on Adjustment Bonds	$ 9,395,574.03	$ 8,821,814.87	+$ 573,759.16
Interest on Adjustment Bonds	869,333.30	1,325,551.68	— 456,218.38
Net Income	$ 8,526,240.73	$ 7,496,263.19	+$1,029,977.54

* Includes $534,882.37 Retroactive Mail pay.

Financial

Preferred Stock, Series "A," increased during the year by $5,493,213.06, of which $5,492,100 was for conversion of a similar amount of Adjustment Mortgage 5%, Series "A" Bonds and $1,113.06 issued for corporate purposes.

Common Stock (no par value) increased during the year $1,834.76 represented by 22.2611 shares issued for corporate purposes.

Long Term Debt decreased $5,588,200.00, of which $5,492,100.00 is represented by Adjustment Mortgage 5%, Series "A" Bonds converted into Preferred Stock, Series "A", $94,100.00 underlying bonds and equipment notes paid and retired, and $2,000.00 Missouri, Kansas & Texas Railway Company First Mortgage 4% Bonds, heretofore held by the Trustee, surrendered and now carried as treasury assets.

During the year $21,000.00 of underlying Bonds were exchanged for a similar amount of Prior Lien, Series "A" and "B" Bonds.

Dividends were declared during the year at the rate of 7% per annum on Preferred Stock, Series "A," outstanding in the hands of the public.

Operation

The operated mileage on December 31, 1929, was 3,188.57, compared with 3,188.54 on December 31, 1928. The increase of .03 miles was occasioned by relocation of a connection at Granger Texas.

Freight revenues in 1929 were $642,662.94 less than in 1928, or 1.42%, notwithstanding that for the first eight months' period there was an increase of $1,016,039.44. The abrupt decline during the last four months was due in a large measure to partial failure of the cotton crop in Texas, to lack of export demand for grain and grain products, and to temporary reduction in grain rates which was made as an emergency measure to, if possible, stimulate movement to seaboard during the summer and early fall for the purpose of relieving interior storage. Freight rate reductions and adjustments ordered by the Interstate Commerce Commission, and placed in effect during the year, will decrease our freight revenues at the rate of approximately $125,000 per annum.

Passenger traffic continues to decline as the result of automobile travel and more bus competition. The loss is principally in local or short haul business. However, the decrease in number of passengers carried, 1929 compared with 1928, is less than one-half the decrease in 1928 compared with 1927, indicating that we are reaching the minimum number of passengers who will use railroad service. The decrease in passenger revenues in 1929 compared with 1928 was $561,108.40 or 8.29%, while the decrease in 1928 compared with 1927 was $1,044,674.46 or 13.37%.

Train operation, both freight and passenger, was generally satisfactory throughout the year. There were some interruptions by high water at various points on the system, particularly during the month of May, and in Missouri during the month of August.

The property, including roadway, structures and rolling stock, has been maintained in good condition.

[ADVERTISEMENT]

Federal Valuation

The Interstate Commerce Commission did not serve a final valuation upon the property of Missouri-Kansas-Texas Lines during the year 1929. Some progress has been made in work required by the Commission in connection with bringing valuations to December 31, 1927. The cost of valuation work to the end of 1929 aggregated $1,621,642.27.

Industrial Development

Industrial development during the year has resulted in establishing on the lines of your Company 248 new industries, representing an investment of approximately $8,000,000. Seven of these industries are concerns engaged in mining and processing minerals, representing an investment of $1,100,000; thirty-two are concerns utilizing farm products, with an estimated investment of $1,550,000; nine are fabricating concerns, with an investment of $450,000, and two hundred are warehousing and distributing concerns, representing an investment of $4,900,000. These concerns produce a traffic movement estimated at 27,570 cars of freight per annum.

C. HAILE,
President.

Missouri-Kansas-Texas Lines—Consolidated General Balance Sheet

Assets

	December 31, 1929	December 31, 1928	+ Increase or — Decrease
INVESTMENTS:			
Investments in Road and Equipment:			
Road	$238,533,117.75	$235,401,257.04	+$3,131,860.71
Equipment	53,160,992.88	52,906,033.90	+ 254,958.98
	$291,694,110.63	$288,307,290.94	+$3,386,819.69
Improvements on Leased Railway Property	$ 3,564.07	$ 9,146.61	—$ 5,582.54
Deposits in Lieu of Mortgaged Property Sold	212.50	212.50	
Miscellaneous Physical Property	1,095,862.17	1,119,754.73	— 23,892.56
Investments in Affiliated Companies—Pledged	527,000.00	527,000.00	
Investments in Affiliated Companies—Unpledged	1,050,761.46	816,559.83	+ 234,201.63
Other Investments:			
United States Government Securities	3,071,406.25	4,023,664.57	— 952,258.32
Other Securities	673,171.44	665,221.74	+ 7,949.70
TOTAL INVESTMENTS	$298,116,088.52	$295,468,850.92	+$2,647,237.60
CURRENT ASSETS:			
Cash	$ 3,256,270.36	$ 2,672,349.31	+$ 583,921.05
Time Drafts and Deposits	5,115,520.58	7,290,917.84	— 2,175,397.26
Special Deposit	26,389.67	98,614.52	— 72,224.85
Loans and Bills Receivable:			
Time Loans	4,905,992.38	1,100,000.00	+ 3,805,992.38
Other Bills Receivable	42,263.54	33,787.85	+ 8,475.69
Traffic and Car Service Balances Receivable	751,796.73	1,000,821.42	— 249,024.69
Net Balance Receivable from Agents and Conductors	815,967.08	874,536.33	— 58,569.25
Miscellaneous Accounts Receivable	1,204,514.78	1,211,595.65	— 7,080.87
Material and Supplies	5,459,277.40	5,518,809.76	— 59,532.36
Interest and Dividends Receivable	87,506.75	56,530.07	+ 30,976.68
Other Current Assets	23,946.02	53,926.73	— 29,980.71
TOTAL CURRENT ASSETS	$ 21,689,445.29	$ 19,911,889.48	+$1,777,555.81
DEFERRED ASSETS:			
Working Fund Advances	$ 87,885.37	$ 87,326.59	+$ 558.78
Other Deferred Assets	2.00	3.00	— 1.00
TOTAL DEFERRED ASSETS	$ 87,887.37	$ 87,329.59	+$ 557.78
UNADJUSTED DEBITS:			
Rents and Insurance Premiums Paid in Advance	$ 100,813.53	$ 93,237.22	+$ 7,576.31
Other Unadjusted Debits	228,590.88	371,021.71	— 142,430.83
TOTAL UNADJUSTED DEBITS	$ 329,404.41	$ 464,258.93	—$ 134,854.52
TOTAL	$320,222,825.59	$315,932,328.92	+$4,290,496.67
The following Assets not included in Balance Sheet Accounts:			
Securities held for Exchange of Underlying Securities:			
Long Term Debt	$ 31,767,600.00	$ 31,989,800.00	—$ 222,200.00
Securities Issued or Assumed—Unpledged:			
Preferred Stock	5,528,364.39	5,529,477.45	— 1,113.06
Common Stock	15,730,515.52	15,732,350.28	— 1,834.76
Long Term Debt	11,593,105.46	11,389,905.46	+ 203,200.00
Securities Issued or Assumed—Pledged:			
Long Term Debt	17,497,000.00	17,477,000.00	+ 20,000.00

NOTE.—Intercorporate Assets and Liabilities are excluded.

Liabilities

	December 31, 1929	December 31, 1928	+ Increase or — Decrease
STOCK:			
CAPITAL STOCK:			
Preferred (Par value, $100.00 per share)	$ 65,076,364.82	$ 59,569,729.88	+$5,506,634.94
Common (No par value. See note.)	66,653,151.04	66,636,166.31	+ 16,984.73
STOCK LIABILITY FOR CONVERSION:			
Preferred (Par value, $100.00 per share)	57,870.79	71,292.67	— 13,421.88
Common (No par value. See note.)	36,333.44	51,483.41	— 15,149.97
TOTAL STOCK	$131,823,720.09	$126,328,672.27	+$5,495,047.82
LONG TERM DEBT:			
Mortgage Bonds	$ 93,214,179.30	$ 93,226,179.30	—$ 12,000.00
Equipment Trust Obligations	504,600.00	588,700.00	— 84,100.00
Income Mortgage Bonds	15,147,067.24	20,639,167.24	— 5,492,100.00
TOTAL LONG TERM DEBT	$108,865,846.54	$114,454,046.54	—$5,588,200.00
CURRENT LIABILITIES:			
Traffic and Car Service Balances Payable	$ 892,746.46	$ 1,142,273.52	—$ 249,527.06
Audited Accounts and Wages Payable	3,492,760.84	3,988,819.40	— 496,058.56
Miscellaneous Accounts Payable	109,785.67	140,893.10	— 31,107.43
Interest Matured Unpaid	1,666,746.86	1,673,898.87	— 7,152.01
Dividends Matured Unpaid	19,316.25	18,113.13	+ 1,203.12
Funded Debt Matured Unpaid	18,250.00	88,375.00	— 70,125.00
Unmatured Interest Accrued	499,756.51	639,674.27	— 139,917.76
Unmatured Rents Accrued	77,221.63	211,586.84	— 134,365.21
Other Current Liabilities	131,949.04	172,266.98	— 40,317.94
TOTAL CURRENT LIABILITIES	$ 6,908,533.26	$ 8,075,901.11	—$1,167,367.85
DEFERRED LIABILITIES:			
Other Deferred Liabilities	$ 49,018.12	$ 71,213.82	—$ 22,195.70
UNADJUSTED CREDITS:			
Tax Liability	$ 2,121,652.31	$ 2,155,060.14	—$ 33,407.83
Accrued Depreciation—Equipment	11,827,745.73	9,960,834.71	+ 1,866,911.02
Other Unadjusted Credits	1,368,266.15	1,716,219.24	— 347,953.09
Reorganization Suspense	29,887,033.17	29,765,949.01	+ 121,084.16
TOTAL UNADJUSTED CREDITS	$ 45,204,697.36	$ 43,598,063.10	+$1,606,634.26
CORPORATE SURPLUS:			
Additions to Property through Income and Surplus	$ 63,503.65	$ 57,604.15	+$ 5,899.50
Profit and Loss—Balance	27,307,506.57	23,346,827.93	+ 3,960,678.64
TOTAL CORPORATE SURPLUS	$ 27,371,010.22	$ 23,404,432.08	+$3,966,578.14
TOTAL	$320,222,825.59	$315,932,328.92	+$4,290,496.67
The following Liabilities not included in Balance Sheet Accounts:			
Securities held for Exchange of Underlying Securities:			
Long Term Debt	$ 31,767,600.00	$ 31,989,800.00	—$ 222,200.00
Securities held by or for the Company—Unpledged:			
Preferred Stock	5,528,364.39	5,529,477.45	— 1,113.06
Common Stock	15,730,515.52	15,732,350.28	— 1,834.76
Long Term Debt	11,593,105.46	11,389,905.46	+ 203,200.00
Securities held by or for the Company—Pledged:			
Long Term Debt	17,497,000.00	17,477,000.00	+ 20,000.00

The Company is guarantor, jointly with other Companies, of the securities of certain terminal companies, none of which is in default.

NOTE.—There were 808,701.1774 shares Common Stock outstanding in hands of the public on December 31, 1929, an increase of 206.0753 shares. There were also 440.8328 shares included in Stock Liability for Conversion on December 31, 1929, a decrease of 183.8142 shares.

[ADVERTISEMENT]

Financial News

(*Continued from page 1159*)

covered in the earlier report, and also as to the cost of reproduction for the years 1929 to 1923 which were included in the earlier report.

ST. LOUIS SOUTHWESTERN.—*New Director elected.*—W. W. Cumberland of Wellington & Co., New York, was elected a director at the annual stockholders meeting at St. Louis, Mo., on April 30, to succeed Harry E. Ward. Walter E. Meyer, a minority member of the board of directors, experienced a "crushing defeat." Daniel Upthegrove, president of the Cotton Belt, said, in a statement following the meeting, that in his attempt to gain control of the board and the railroad by obtaining proxies of stockholders, "Meyer was able to poll but 64,184 shares whereas those favoring the management totaled 282,610. As a result, Meyer was able to elect but one director (himself) instead of two, as last year. Last year, Meyer claimed stock proxies of more than 72,000. This year he had common stock proxies of 58,142, whereas the management held common stock proxies of 92,444, thus changing the relative position with respect to the holders of the common stock."

SOUTHERN PACIFIC.—*Abandonment.*—This company has been authorized by the Interstate Commerce Commission to abandon two short lines aggregating 5.2 miles in length in the city of Portland, Ore., a line 1.6 miles long in Forest Grove, Ore., a one-mile line in Hillsboro, Ore., and a one-mile line in Newberg, Ore.

SOUTHERN PACIFIC.—*Operation and Securities.*—The Interstate Commerce Commission has authorized the Clackamas Eastern to acquire the logging railroad formerly owned by the Portland Southern in Clackamas, Ore., and to issue and sell $250,000 of common stock to provide funds for the acquisition and rehabilitation of the line. The Southern Pacific is authorized to acquire control of the property by the purchase of its capital stock.

TEXAS & PACIFIC.—*Stock.*—The Interstate Commerce Commission has authorized the Texas Short Line to issue $14,000 of capital stock to be sold at par to the Texas & Pacific, the funds to be used for construction purposes.

WABASH.—*Bonds.*—The Interstate Commerce Commission has authorized this company to issue $15,000,000 of refunding and general mortgage 5 per cent bonds, series D, to mature in 1980. The issue is authorized for sale to Kuhn, Loeb & Co. at 98, which will make the annual cost to the railroad 5.11 per cent. The Ann Arbor has been authorized to issue $2,502,000 of improvement and extension mortgage 6 per cent bonds to be delivered to the Wabash in satisfaction of an equal amount of indebtedness and for pledge by the latter company with the corporate trustee of its refunding and general mortgage.

WABASH.—*Seeks to Acquire W. & L. E.*—This company, whose application to the Interstate Commerce Commission for authority to acquire control of a system of railroads in eastern territory, filed last summer, has been dismissed by the commission, on May 5 filed a separate application for authority to acquire control of the Wheeling & Lake Erie. Whereas the general application of last year did not state terms and conditions on which it was proposed to acquire the roads, the new application makes an offer to purchase the majority block of the W. & L. E. stock originally acquired by the Baltimore & Ohio, New York Central and New York, Chicago & St. Louis and now held by a trustee for the beneficial interest of the Nickel Plate, pending a decision by the commission as to its ultimate disposition, for the amount of its cost to the three trunk lines plus 6 per cent and less dividends paid on the stock since its acquisition.

WHEELING & LAKE ERIE.—*Annual Report.*—The annual report of this company for 1929 shows net income after interest and other charges of $4,679,321, as compared with net income in 1928 of $4,364,748. Selected items from the income statement follow:

	1929	1928	Increase or Decrease
Average Mileage operated	511.60	511.60	.....
RAILWAY OPERATING REVENUES	21,335,222	20,705,664	+629,558
Maintenance of way	2,553,713	2,539,198	+ 14,515
Maintenance of Equipment	5,069,848	4,523,822	+546,026
Transportation	6,022,994	5,802,265	+220,729
TOTAL OPERATING EXPENSES	14,693,178	13,868,383	+824,795
Operating ratio	68.87	66.98	+ 1.89
NET REVENUE FROM OPERATIONS	6,642,044	6,837,281	—195,237
Railway tax accruals	1,556,021	1,679,494	—123,473
Railway operating income	5,085,125	5,154,886	— 69,761
Hire of freight cars—Dr.	16,114	234,848	—218,734
Joint Facility rents	25,569	2,926	+ 22,643
Non-operating income	617,051	482,967	+134,084
GROSS INCOME	5,702,176	5,637,853	+ 64,323
Interest on funded debt	818,728	845,652	— 26,924
TOTAL DEDUCTIONS FROM GROSS INCOME	1,022,855	1,273.105	—250,250
NET INCOME	4,679,321	4,364,748	+314,573

Dividends Declared

International Railways of Central America.—Preferred, 1¾ per cent, quarterly, payable May 15 to holders of record April 30.

New York, Chicago & St. Louis.—Common, $1.50, quarterly; Preferred, $1.50, quarterly, both payable July 1 to holders of record May 15.

Average Prices of Stocks and of Bonds

	May 6	Last week	Last year
Average price of 20 representative railway stocks	126.71	127.48	130.96
Average price of 20 representative railway bonds	93.58	93.28	91.64

Railway Officers

Executive

F. A. Shaffer, general manager of the St. Louis-San Francisco at Springfield, Mo., has also been elected president of the Wichita (Kan.) Union Terminal, succeeding **F. A. Lehman,** general manager of the Atchison, Topeka & Santa Fe at Topeka, Kan., who has been elected vice-president of the terminal company.

James Keeley, who has been elected vice-president of the Pullman Company, with headquarters at Chicago, has been connected with that organization for about five years. He was born in London, England, on October 14, 1867. For several years prior to 1898 he served as a reporter, night city editor and city editor of the Chicago Tribune, then occupying the positions of managing editor and general manager of that newspaper until 1914. From that year to 1918 he was editor of the Chicago Herald (now part of the Herald and Examiner). Mr. Keeley had been assistant to the president of the Pullman Company since 1925.

Financial, Legal and Accounting

D. J. Buckley, division accountant of the Pennsylvania division of the Delaware & Hudson, has been appointed general assistant to the auditor of disbursements, with headquarters at Albany, N. Y., and will be succeeded by chief clerk **W. F. Reidy.**

Operating

W. H. Barnes has been appointed trainmaster of the Coster division of the Southern, succeeding **C. D. Vance,** transferred.

John C. Toms has been appointed assistant trainmaster of the Duluth-Superior division of the Minneapolis, St. Paul & Sault Ste. Marie, with headquarters at Crosby, Minn.

J. T. Fitzgerald, superintendent of freight transportation of the Hocking Valley, has been appointed assistant superintendent of transportation of the Chesapeake & Ohio, with headquarters as before at Columbus, Ohio.

George H. Foster, assistant superintendent of the Portland division of the Maine Central, has been appointed to succeed **F. O. Wood** as transportation assistant in the office of the vice-president and general manager.

B. C. Murphy, trainmaster on the Memphis division of the Missouri Paci-

fic at Wynne, Ark., has been promoted to assistant superintendent on the Louisiana division at El Dorado, Ark., succeeding **E. B. Stevenson,** who has been appointed trainmaster on the Memphis division at Wynne.

W. M. Duke, dispatcher on the Gulf, Colorado & Santa Fe at Cleburne, Tex., has been promoted to trainmaster of the Dallas and Paris districts, with headquarters at the same point. Mr. Duke succeeds **E. D. Shackelford,** who has been transferred to the Second district at Cleburne, to succeed **J. V. Clifford,** deceased. **A. J. Cleary,** assistant superintendent on the Panhandle & Santa Fe at San Angelo, Tex., has been appointed trainmaster at Slaton, Tex., succeeding **D. L. Badgley,** who has been transferred to San Angelo.

F. D. Beale, superintendent of the Richmond division of the Chesapeake & Ohio, has been appointed assistant general superintendent of the western general division, with headquarters at Huntington, W. Va., a newly created position. **E. D. Glenn,** assistant superintendent of the Clifton Forge division with headquarters at Ronceverte, W. Va., has been appointed to succeed Mr. Beale as superintendent of the Richmond division at Richmond, Va. **H. A. Iuler,** trainmaster at Stevens, Ky., has been appointed assistant superintendent of the Clifton Forge division and **S. H. Pullian** will succeed Mr. Iuler as trainmaster at Stevens, Ky., with jurisdiction over the line between the west limit of Russell yard and the east limit of Stevens yard. **R. N. Begien, Jr.,** has been appointed trainmaster of the Piedmont and Virginia Air Line sub-divisions, with headquarters at Charlottesville, Va., succeeding Mr. Pullian.

Frank J. Runey, superintendent of the Portland division of the Maine Central, retired on April 1, and **Frederick O. Wood** has been appointed to succeed him as superintendent at Portland, Me., as announced in the *Railway Age* of May 3. Mr. Runey has been in the continuous service of the Maine Central for 45 years. He commenced his railway career with that road in 1885, as a trackman, later serving as telegrapher, train dispatcher and in the engineering department. He was advanced to superintendent of the Portland division in 1917, which position he held until his retirement.

Mr. Wood began his railroad career in 1887, as agent and operator on the New York & New England (now part of the New York, New Haven & Hartford). Later he served as assistant ticket agent, operator and train dispatcher on the Pittsburgh & Lake Erie; train dispatcher, successively, on the New York & New England, Boston & Maine and Fitchburg (now Boston & Maine) and train dispatcher and trainmaster on the St. Louis-San Francisco. Later while connected with the Wabash he served in the office of the vice-president and general manager. He was then yardmaster of the Union Railroad

Frederick O. Wood

at Pittsburgh, Pa., until 1908, when he became connected with the Maine Central and with them has held positions as dispatcher, chief train dispatcher, assistant superintendent, superintendent transportation, and transportation assistant in the office of the vice-president and general manager.

Traffic

Fred N. Hicks, assistant traffic manager of the Chicago, Milwaukee, St. Paul & Pacific, with headquarters at Seattle, Wash., has been appointed western traffic manager, with headquarters at the same point.

J. A. Hickman, assistant general freight agent of the Cleveland, Cincinnati, Chicago & St. Louis, in charge of industrial development, has been appointed manager of industrial development, with headquarters as before at Cincinnati, Ohio. **W. F. Benning,** division freight agent at Indianapolis, Ind., has been promoted to assistant general freight agent at that point.

H. Q. Wasson, general freight agent of the Hocking Valley, has been appointed assistant general freight and passenger agent of the Chesapeake & Ohio, with headquarters as before at Columbus, Ohio. **Ira W. Morris,** assistant general freight agent of the Hocking Valley at Columbus, has been transferred to the Chesapeake & Ohio at Chicago. **C. A. Ulrich,** commercial agent for the C. & O. at Detroit, has been promoted to general agent at that point. **J. M. Griffin,** general agent, passenger department, for the Hocking Valley at Toledo, Ohio, has been transferred to the Chesapeake & Ohio at the same point. These changes are incidental to the assumption of control of the Hocking Valley by the Chesapeake & Ohio on May 1.

C. M. Tyler, freight agent of the Southern, whose appointment as assistant freight traffic manager with headquarters at Jacksonville, Fla., was announced in the *Railway Age* of April 5, was born on February 14, 1878, at Valdosta, Ga. He commenced his railway career as a local agent and telegraph operator with the Plant System (now the Atlantic Coast Line) in 1895, and was in the continuous service of that railroad until January 1, 1906, when he became connected with the Southern as traveling freight agent, with head-

C. M. Tyler

quarters at Tampa, Fla. In 1912, he was appointed district freight agent at Jacksonville, Fla., and later he was advanced to freight agent of the state of Florida, in which capacity he served until his recent promotion.

Engineering, Maintenance of Way and Signaling

E. G. Day has been appointed division engineer of the Peninsula division of the Chicago & North Western, with headquarters at Escanaba, Mich., succeeding **G. Loughnane,** who retired from active service on May 1.

F. A. Jones, division engineer of the Omaha and Northern Kansas divisions of the Missouri Pacific at Falls City, Neb., has been transferred to the Kansas City (Mo.) Terminal division, replacing **R. G. Bush,** who has been transferred to the Omaha and Northern Kansas divisions.

Mechanical

C. E. Plott, general foreman of locomotive repairs on the Chicago, Burlington & Quincy at Centralia, Ill., has been promoted to master mechanic of the Centerville division, with headquarters at Centerville, Iowa, succeeding **J. C. Climo,** who retired under the pension rules of the company on April 16.

T. F. Barton has been appointed superintendent of motive power of the Chesapeake & Ohio, with headquarters at Richmond, Va., and **C. B. Hitch,** master mechanic, will succeed Mr. Barton as general master mechanic, western general division at Huntington, W. Va., with jurisdiction over the Hinton, Huntington, Ashland, Russell and Cincinnati divisions. **R. G. McKee,** master mechanic at Peru, Ind., has been transferred

to a similar position with headquarters at Russell, Ky., succeeding Mr. Hitch as master mechanic of the Cincinnati and Russell divisions.

W. D. Hartley, who has been promoted to mechanical superintendent of the Western lines of the Atchison, Topeka & Santa Fe, with headquarters at La Junta, Colo., has been connected with that road for 27 years. He was born at Albuquerque, N. M., on August 14, 1886, and entered railway service in April, 1903, as a machinist apprentice on the Santa Fe. In 1909 he was advanced to roundhouse foreman at Richmond, Cal., then being further advanced

W. D. Hartley

to division foreman at Barstow, Cal., in 1914. Mr. Hartley was transferred to Richmond in 1918, where he remained until 1920 when he was promoted to master mechanic at Clovis, N. M. In November, 1921, he was transferred to Raton, N. M., his promotion to mechanical superintendent of the Western lines becoming effective on April 1.

Purchases and Stores

G. A. McTyre, storekeeper at Fulton, Va., has been transferred to Covington, Ky., succeeding **W. H. Stowasser,** who has been transferred to Fulton.

Obituary

M. W. Cooley, general manager of the Uintah Railway, with headquarters at Mack, Colo., from 1906 to 1921, died at Grand Junction, Colo., on April 29, while on a trip from his home in New York. Mr. Cooley was 75 years of age.

Hugh C. Higgins, trainmaster of the Iowa division of the Chicago, Rock Island & Pacific at Council Bluffs, Iowa, died at that point on April 6. Mr. Higgins had been on a leave of absence because of ill health since October, 1929.

Alfred G. Armstrong, attorney for the Eastern and Western lines of the Atchison, Topeka & Santa Fe, with headquarters at Topeka, Kan., died near White Church, Kan., on May 1 from injuries received in an accident.

P. T. Dunn, former master mechanic on the Pennsylvania at Chicago, Richmond, Ind., Wellsville, Ohio, and Cincinnati, and for the past few years connected with the office of the superintendent of motive power at Cleveland, Ohio, died in the latter city on March 24.

Richard W. Graham, superintendent of construction of the Western Lines of the Canadian National from 1920 until 1928, died at Prince Albert, Sask., on May 2 at the age of 68 years. Mr. Graham served as superintendent of construction of the western lines and of the western region of the Canadian National with headquarters at Winnipeg, Man., Edmonton, Alta., and Prince Albert, until his retirement on October 15, 1920.

William M. Robinson, president and general manager of the Augusta & Somerville, with headquarters at Augusta, Ga., died at his home in that city on April 17 at the age of 82 years. Mr. Robinson had occupied successively the positions of track supervisor and roadmaster of the Georgia Railroad until 1914 when he became valuation engineer of the Georgia Railroad & Banking Company. He had been president and general manager of the Augusta & Somerville since 1920. He was a charter member of the A. R. E. A.

Charles Selden, general inspector of transportation of the Baltimore & Ohio, died on May 2, after an illness of several weeks. He was born in Cincinnati, Ohio, on January 8, 1849. Mr. Selden began his railroad career in 1866, as an operator on the Cincinnati & Indianapolis Junction, part of the former Cincinnati, Hamilton & Dayton (now Baltimore & Ohio), later serving for a time as clerk in the shops and then train dispatcher. In 1868, he left railroad service and entered the employ of the Western Union Telegraph Company at Cincinnati, resigning in 1879 from that company to construct and superintend the Bell Telephone exchange at Toledo, Ohio serving at the same time as superintendent of the American Union Telegraph Company. He re-entered railroad service in 1881, becoming superintendent of telegraph of the Wabash, and in 1884 accepted a similar position with the Baltimore & Ohio, since which time he acted as chairman of the operating rules committee. He was appointed to the position of general inspector of transportation on January 1, 1919, in which capacity he served until his death.

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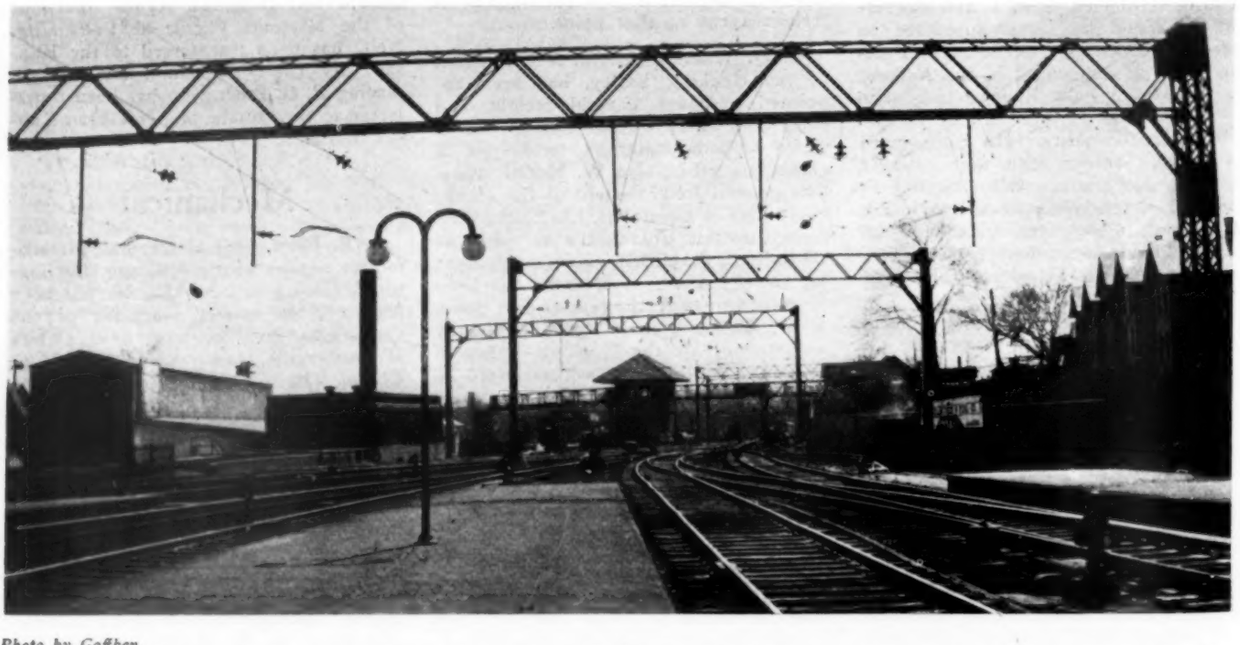

Photo by Gaffken

Montclair, N. J., Terminal of the Delaware, Lackawanna & Western, with Catenary Construction Completed for Electric Operation of Suburban Trains